HCD-H170/H170K/H700

SERVICE MANUAL

HCD-H170, HCD-H170K and HCD-H700
are the tuner, deck, CD and amplifier
section in FH-B170/B177, FH-B170K
and MHC-700 respectively.

Dolby noise reduction manufactured under license from
Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⫿⫿ are trademarks of
Dolby Laboratories Licensing Corporation.

AEP Model
HCD-H170/

UK Model

E Model
HCD-170/HCD-170K
Australian Model
HCD-H170

PHOTO: HCD-H170K

SPECIFICATIONS

CD Section	Model Name Using Similar Mechanism		NEW
	CD Mechanism Name		CDM13B-5BD4A
	Base Unit Name		BU-5BD4A
DECK Section	Model Name Using Similar Mechanism		NEW
	Tape Transport Mechanism	DECK A	TCM-190RA13A
	Type	DECK B	TCM-190RB22A

Tuner section
FM stereo, FM/AM superheterodyne tuner

FM tuner section
Tuning range 87.5 — 108 MHz
Antenna   FM lead antenna
(HCD-H700)
Telescopic antenna
(HCD-H170, H170K)
Antenna terminals
75 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section
Tuning range
AEP,UK model
MW: 531 — 1,602 kHz
LW: 153 — 279 kHz
E, Saudi Arabia, Australian models
MW: 531 — 1,602 kHz
SW: 5.95 — 17.9 MHz
Antenna   AM loop antenna
External antenna terminals
Intermediate frequency
450 kHz

Amplifier section
Continuous RMS power output
25 + 25 watts (6 ohms at 1 kHz, DIN)
Peak music power output
(E, Saudi Arabia, Australian model)
240 watts (4 speakers driven)

Inputs
For HCD-H170K

MIX MIC-1 and MIX MIC
2 (minijack):
Sensitivity 1 mV,
impedance 600 ohms
PHONO (phono jack):
sensitivity 5 mV,
impedance 47 kilohms
For HCD-H700
MIX MIC (minijack):
Sensitivity 1 mV,
impedance 600 ohms
PHONO (phono jack):
sensitivity 5 mV,
impedance 47 kilohms
For HCD-H170
MIX MIC (minijack):
Sensitivity 1 mV,
impedance 600 ohms
VIDEO/AUX (phono
jack): sensitivity 5 mV,
impedance 47 kilohms
Outputs   HEADPHONES (stereo
minijack): accept
headphones of 8 ohms
or more.
SPEAKERS: accept
impedance of 6 to
16 ohms.

Compact disc player section
System   Compact disc digital
audio system
Laser   Semiconductor laser
(λ = 780 nm)
Emission duration:
Continuous
Laser output   Max. 44.6 μW*
* This output is the
value measured at
distance of about
200 mm from the
objective lens surface
on the Optical Pick-up
Block.
Signal-to noise ratio   More tha 95 dB
Dynamic range   More than 90 dB

Cassette deck section
Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
60 — 13,000 Hz (±3 dB), using
TYPE I cassette (Sony HF-S)
60 — 14,000 Hz (±3 dB), using
TYPE II cassette
Wow and flutter
0.1% WRMS ±0.3% (DIN)

COMPACT DISC DECK RECEIVER
SONY®

MICROFILM

Speaker section

Speaker system   3 way system
Speaker units
    Woofer: 13 cm dia., cone type
    Tweeter: 5 cm dia., cone type
    Super tweeter: 2 cm dia., dome
    type
Enclosure   Bass reflex
Frequency range   60 Hz — 20 kHz
Sensitivity   88 dB/w/m
Rated impedance   6 ohms
Dimensions   Approx. 195 × 285 × 230 mm
           (7 5/8 × 11 1/4 × 9 inches)
Weight   Approx. 3.0 kg (6 lb 10 oz)
           net per speaker

General

Desti- nation	Power requirements	Power consumption
AEP model	220-230V AC, 50/60Hz	60 watts
UK model	240V AC, 50Hz	115 watts
E, Saudi Arabia Australian model	100V-120V or 220V- 240V AC adjustable, 50/60Hz	60 watts

Dimensions
    Approx. 225 × 285 × 268 mm
    (w/h/d)
    (8 7/8 × 11 1/4 × 10 5/8 inches)
    incl. projecting parts and controls
Weight
    Approx. 6.2 kg (13 lb 11 oz)
Accessories supplied
    AM loop antenha (1)
    Remote commander (1)
    Sony SUM-3 (NS) batteries (2)
    FM lead antenna (1) (HCD-H700 only)
    Speaker cords (2)
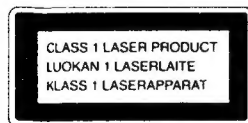   (HCD-H700, except for the UK
    model)

Design and specifications subject to
change without notice.

Note
This appliance conforms with EEC
Directive 87/308/EEC regarding
interference suppression.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a
CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT
label is located on the rear
exterior.

TABLE OF CONTENTS
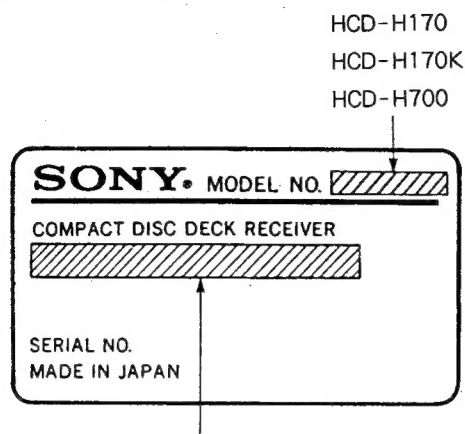
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED
LINE WITH MARK ⚠ ON. THE SCHEMATIC DIAGRAMS
AND IN THE PARTS LIST ARE CRITICAL TO SAFE
OPERATION. REPLACE THESE COMPONENTS WITH
SONY PARTS WHOSE PART NUMBERS APPEAR AS
SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUB-
LISHED BY SONY.

SECTION 1
SERVICING NOTES

MODEL IDENTIFICATION
— *Specification Labels* —

HCD-H170
HCD-H170K
HCD-H700

SONY® MODEL NO.

COMPACT DISC DECK RECEIVER

SERIAL NO.
MADE IN JAPAN

AEP model : AC : 220-230V~50/60Hz 60W

E, Saudi Arabia Australian model : AC : 100-120/220-240~50/60Hz 60W

UK model : AC : 240V~50Hz 115W

On operating voltage
Before operating the stereo system, check
that the operating voltage of your system
is identical with the voltage of your local
power supply.

AEP model	220-230V AC, 50/60Hz
UK model	240V AC, 50Hz
Saudi Arabia Australian model	100V-120V/220V-240V AC, adjustable, 50/60Hz

VOLTAGE SELECTOR
110V-120V
220-240V
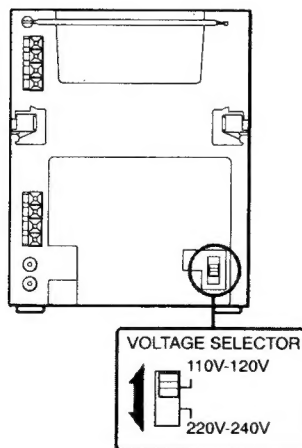
Install the two R6 (size AA) batteries in the
supplied remote commander for remote
control operation.

Battery life
About half a year of normal operation can
be expected when using the Sony SUM-3
(NS) batteries.
When the batteries are exhausted, the
commander cannot operate the stereo
system. When this happens, replace both
batteries with new ones.

To avoid battery leakage
If the commander is not to be used for a
long time, remove the batteries to avoid
damage caused by battery leakage and
corrosion.
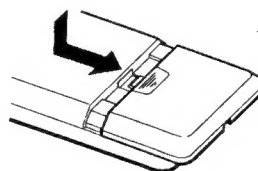
LASER DIODE AND FOCUS SEARCH OPERATION CHECK

1. Make POWER switch on with no disc inserted and disc table closed.
2. Confirm that the following operation is performed while observing the objecting lens.
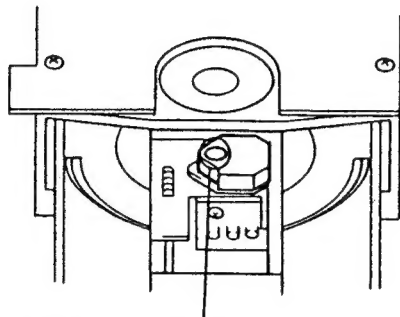
❶ Confirm that laser beam is spread.

❷ Up and down motion of the objective lens. (3 times)

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

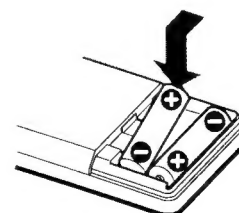During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF

BOTTOM VIEW
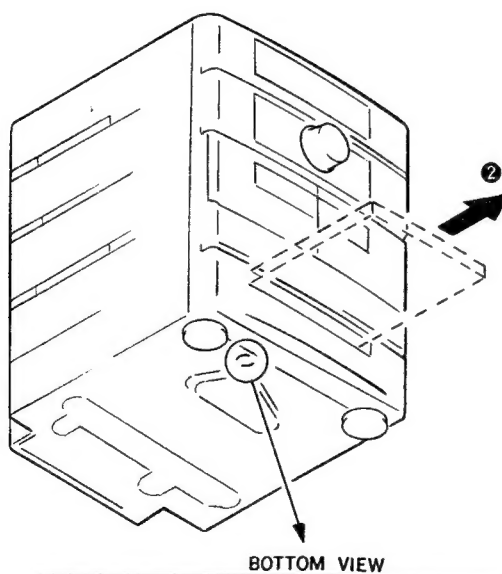
(1) Insert to ❶ for tapering driver, etc., and turn in the direction of arrow OFF. (Disc tray open)
(2) Tray as come out little of front panel, pull out in the direction of arrow ❷ by hand.
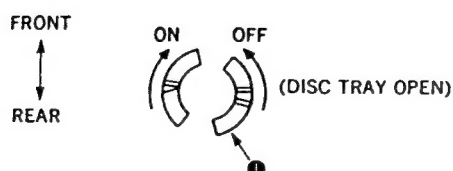
FRONT

ON   OFF

REAR   (DISC TRAY OPEN)

❶

Parts Identification

Refer to the pages indicated in parenthesis for use of the buttons.

Tuner Section A

[1] POWER ON/STANDBY switch
[2] Remote sensor
[3] TIMER button (100)
[4] TIMER REC button (104)
[5] Display window
[6] PRESET/TIMER +/- buttons (52, 100, 104)
[7] BAND button (48)
[8] MEMORY/NEXT button (52, 100, 104)
[9] STEREO/MONO button (50)
[10] TUNING +/- buttons (48)

Amplifier Section B

[1] MIC (microphone) 1 and 2 LEVEL controls (only for FH-B170K) (112)
[2] MIX MIC 1 and 2 jacks (for FH-B170K) (112)
MIX MIC jack (for other models) (112)
[3] HEADPHONES jack (22)
[4] ECHO LEVEL control (only for FH-B170K) (112)
[5] MPX (multiplex) button and indicator (only for FH-B170K) (114)
[6] VOLUME control (22)
[7] PRESET button and indicators (62)
[8] FUNCTION button
[9] DBFB (Dynamic Bass Feed Back) button and indicator (22)
[10] KARAOKE PON (vocal reduction) button and indicator (for FH-B170K) (114)
S-SUR (simulated surround) button (for other models) (22)
[11] EQ (equalizer ON/OFF) button (62)

FH-B170K

FH-B170/B177
MHC-700
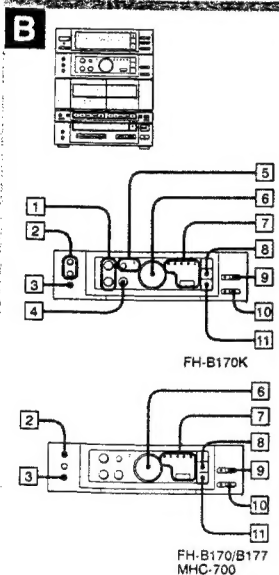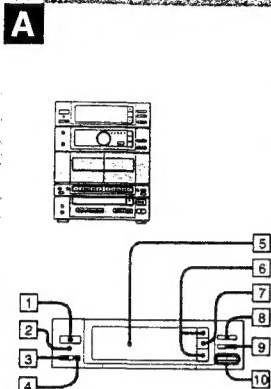
Parts Identification

Cassette Deck Section C

[1] Cassette holders
[2] HIGH SPEED button (72)
[3] CD SYNC button (86, 94, 98)
[4] EJECT ▲ button (for deck A) (56)
[5] DIRECTION MODE selector (56)
[6] Tape operating buttons (for deck A and B)
▶▶ (fast wind and AMS*) button (56)
◀◀ (rewind and AMS*) button (56)
▷: Forward play button and direciton indicator (56)
◁: Reverse play button and direction indicator (56)
■: Stop button (56)
[7] REC ● (recording) button
[8] PAUSE II button (56)
[9] EJECT ▲ button (for deck B) (68)
[10] DOLBY NR selector (56)
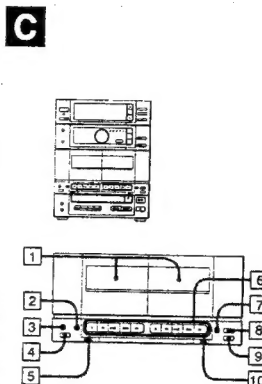
CD Player Section D

[1] Disc tray (24)
[2] CHECK button (42)
[3] EDIT/TIME FADE button (78, 90)
[4] PLAY MODE buttons
CONTINUE button (38)
SHUFFLE button (38)
PROGRAM button (40, 96)
[5] ▲ OPEN/CLOSE button (24)
[6] ▷II (play/pause) button (24)
[7] ■ (stop) button (24)
[8] I◀◀◀/▶▶▷I (manual search/AMS*) buttons (26, 96)
[9] REPEAT button (32)
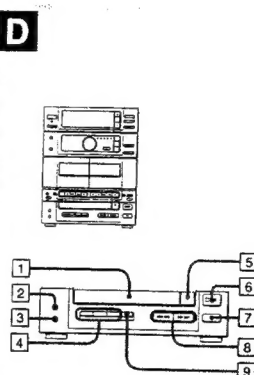
* AMS is the abbreviation of Automatic Music Sensor.

134   136

Parts Identification
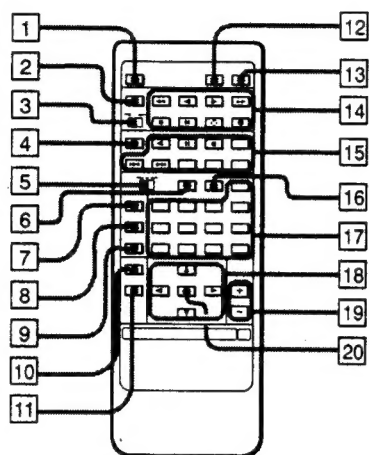
Remote Commander E

1. CLOCK DISPLAY button (20)
2. TAPE function button
3. DECK A/B selector
4. CD function button
5. TUNER/EQ/CD selector
6. CHECK button (42)
7. TUNER function button
8. VIDEO function button
9. PHONO function button
10. MEMORY button (66)
11. DBFB button (22)
12. SLEEP button (110)
13. SYSTEM POWER button
14. Tape operating buttons
15. CD player operating buttons
16. CLEAR button (38)
17. TUNER/EQ/CD numeric buttons (28, 62)
18. CURSOR CONTROL buttons (64)
19. VOL +/- (volume control) buttons (22)
20. EQ button (62)

How to Use This Manual

This manual applies MHC-700 for Europe and the U.K., FH-B177 for Europe, FH-B170 for the U.S.A. and other countries and FH-B170K for other countries. The differences between them are indicated below:

Yes: Equipped   No: Not equipped

Destina-tion	USA	Europe and UK	Other countries
Receivable band	AM/FM	FM/LW/MW	FM/MW/SW
PHONO jack	No	Yes	No
VIDEO/AUX jack	Yes	No	Yes

Equipped antenna for FM reception
MHC-700: FM lead antenna
FH-B177, B170 and B170K: Telescopic antenna

In this manual, the illustrations of the unit are illustrated as FH-B177.

How this manual is composed
Please read the instructions in this manual referring to the illustrations.
• The letters in the illustrations correspond to those in the text:
e.g. Speaker Cord Connection **A**
• The step numbers in the illustrations correspond to those in the text.
• Use the page numbers in "Parts Identification" at the end of this manual as an index to find out how to use the buttons and controls.

Overview

Tuner section
• The receivable band stations differ depending on the model where it is destinated for. Please see the table in "How to Use this Manual".
• You can store up to 30 stations (for the USA model) or 40 stations (except for the USA model).

Amplifier section
• DBFB (Dynamic Bass Feedback) system reinforces bass sound.
• You can easily adjust the music to your taste by-selecting from 5 factory-preset graphic equalizer settings.
• You can store up to 5 individual settings of graphic equalizer.
• You can select directly the desired program source just by pressing the operation button (BAND, PRESET/TIMER +/−, or TUNING +/− to select the tuner, ⊳II to select the CD player, and ◁ or ▷ to select the cassette deck) on the program source equipment. (Automatic Source Selection)

CD player section
• You can enjoy listening in various playing modes.
• Edit functions allow you to program selections automatically to fit in a desired duration.

Cassette deck section
• Auto-reverse decks enable repeated playback of both sides of the cassette.
• CD synchro function enables easy recording of a CD.
• Double decks enable tape dubbing and continuous playback.
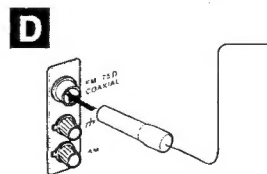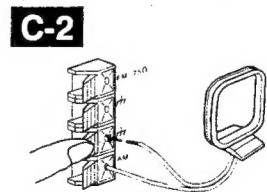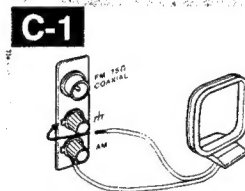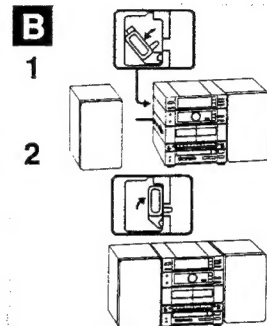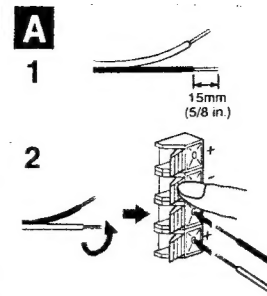
15mm (5/8 in.)

Connections

Notes on connection
• Connect the AC power cord last.
• Cord plugs and jacks are color coded. Red plugs and jacks are for the right channel (R) and white ones for the left channel (L).

Speaker Cord Connection A

1 Strip 15 mm (5/8 inches) of the speaker cord coating from the end of the cord.

2 Connect the right speaker to R, with the red cord to + and the black cord to −.
Connect the left speaker to L, with the red cord to + and the black cord to −.

To attach the speakers to the main unit — For FH-B177, B170 and B170K only B

1 Unlock the stopper and slide the speaker so that it hooks to the system.

2 Lock the stopper.

AM Loop Antenna Connection C

For the European and U.K. model C-1

For the models for other countries C-2
Connect the supplied loop antenna to the AM and ⏚ terminals.

FM Lead Antenna Connection (MHC-700 only) D

Connect the supplied FM lead antenna to the FM 75 Ω terminal and extend horizontally.

E-1

E-2

F-1

F-2

G

16
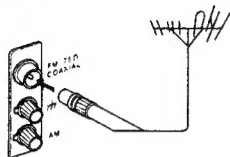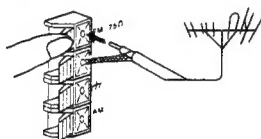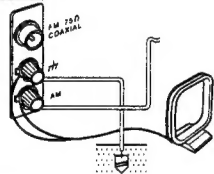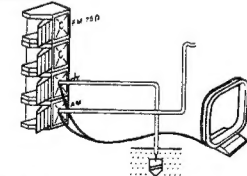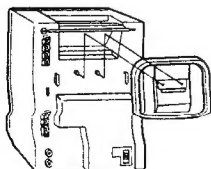
Connections

For Better FM Reception E

For the European and U.K. model
E-1
Connect the outdoor FM antenna to the FM 75 Ω terminal, using 75-ohm coaxial cable and IEC standard socket connector.

For the models for other countries
E-2
Connect the outdoor FM antenna to the FM 75 Ω and ⏚ terminals, using 75-ohm coaxial cable.

For Better AM Reception F

For the European and U.K. model
F-1

For the models for other countries
F-2
Use the 6- to 15-meter (20- to 50-feet) insulated wire for connecting the terminal. Connect the ⏚ terminal to a good ground.

Important
When you use an external antenna, be sure to ground it against lightening. Never connect the ground wire to a gas pipe. Doing so is extremely dangerous.

Power Connection

Connect the supplied AC power cord to AC IN and the other end to a wall outlet.

To attach the AM loop antenna to the main unit in order to carry the unit
See the illustration. G

A-1

PHONO
L
R

A-2

VIDEO/AUX
L
R
RK-C74
LINE OUT

18
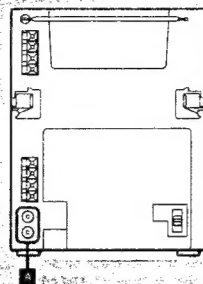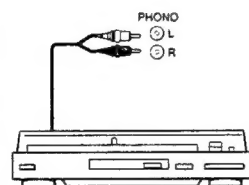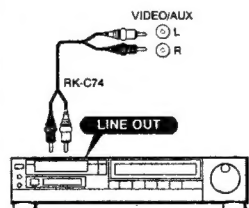
Connections

Adding Other Components to the System A

Turntable system A-1
(For the European and U.K. model)
You can connect a turntable system to the PHONO jacks. To listen to the turntable system, press FUNCTION on the front panel until "PHONO" appears on the display.

VTR A-2
(For the model for other countries)
You can connect a VTR, etc. to the VIDEO/AUX jacks. To listen to the connected equipment, press FUNCTION on the front panel until "VIDEO/AUX" appears on the display.

Changing the MW tuning interval (except for the European and U.K. model)

The MW tuning interval is preset at the factory to 10 kHz for the USA model, and 9 kHz for the models for other countries. If you use the system where the frequency allocation system is different from the preset interval, change the interval as follows:
1 Turn on the power.
2 Tune in any MW station.
3 Turn off the power.
4 Turn the power back on while pressing the TUNING + button.
To reset the interval, follow the same procedure.

Important
When the interval is changed, stored stations will be erased from the memory.

2,4 3,5

1

1

2

3

4

5

20

Clock Setting

Setting the Clock

Example: Set to 9:25 in the morning.

1 Press TIMER and TIMER REC at the same time.

2 Set the hour with PRESET/TIMER – or + button.

3 Press MEMORY/NEXT.

4 Set the minute with PRESET/TIMER – or + button.

5 Press MEMORY/NEXT.
The clock starts operating.

Information on the time
The European and U.K. model shows the time in 24-hour cycle.
The model for other countries shows the time in 12-hour cycle.
AM 12:00 = midnight
PM 12:00 = noon

When a power interruption occurs
The clock and timer settings are all erased, and "0:00" ("AM 12:00") will flash on the display.

To change the frequency display to the time display
Press CLOCK DISPLAY on the remote commander. The time is displayed for about 4 seconds, then the time display changes into the frequency display.

A

MIN — MAX

B

DBFB

C

S-SUR

D

HEADPHONES

22
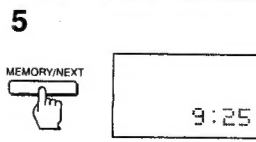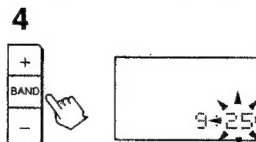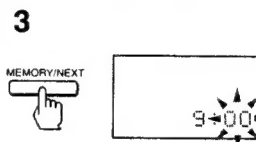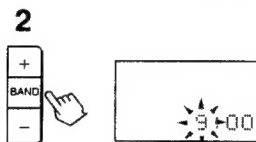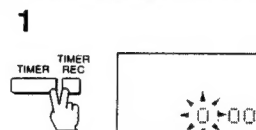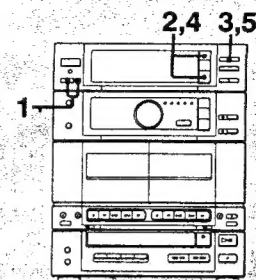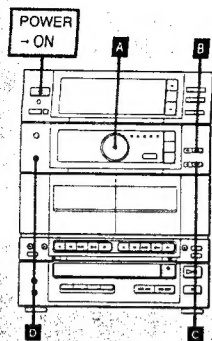
Volume Adjustment A

Turn VOLUME clockwise to increase the sound level, or counterclockwise to decrease it.
(Or press VOL + or − on the remote commander.)

Sound Quality Adjustment

To reinforce bass B
Press DBFB*.

To activate surround effect for stereo sound C
(Except for FH-B170K)
Press S-SUR** during a stereo sound reproduction. This creates the atmosphere of a movie theater or concert hall. This function is not effective for a monaural sound.
(For FH-B170K)
The KARAOKE PON button is provided here. See page 114.

For personal listening D
Connect headphones to HEADPHONES.
No sound comes from the speakers.

*DBFB = Dynamic Bass Feedback
**S-SUR = Simulated surround

POWER
→ ON

1 2

1

OPEN/
CLOSE →

2

⊳□□

a b c

0m20s EQ OFF

d
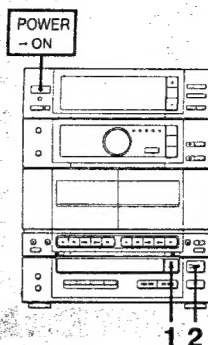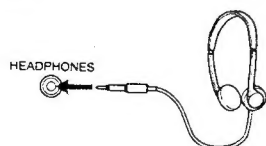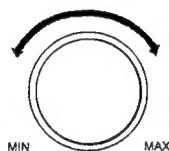
Playing the Entire Disc

1 Press ⏏ OPEN/CLOSE to open the tray.
Place a disc with the printed side up.

2 Press ⊳II. (⊳ on the remote commander)
The tray closes and play starts.

The display shows **a** the current track number, **b** the current INDEX number (of the track), **c** elapsed playing time of the track and **d** track numbers.

Caution on adjusting volume
Do not turn up the volume while listening to a portion with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level portion is played.

To stop play
Press ■.

To stop for a moment during play
Press ⊳II (II on the remote commander). To resume play, press it again.

To stop play and open the tray
Press ⏏ OPEN/CLOSE.

To play an 8 cm (3-inch) CD
Place it on the inner circle of the tray. If the disc is provided with an adaptor, first remove it. Do not put a normal CD (12 cm/5-inch) on top of an 8 cm CD.

24

POWER
→ ON

I◁◁ ◀◀ ▶▶ ▷▷I

A

I◁◁ ◀◀

B

▶▶ ▷▷I
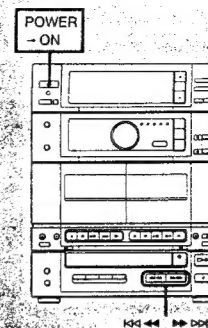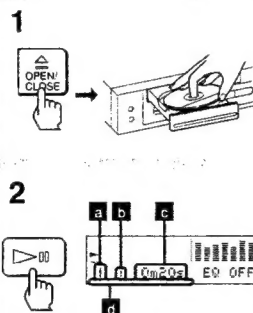
Locating a Particular Selection – Automatic Music Sensor (AMS)

The AMS locates the beginning of a selection.

To locate the beginning of the current or preceding selection A
Press I◁◁◀◀(or I◀◀ on the remote commander) as many times as required.

To locate the beginning of a succeeding selection B
Press ▶▶▷▷I (or ▶▶I on the remote commander) as many times as required.

Locating a Particular Point in a Selection

You can locate any particular point in the selection. This function works during play or pause. This operation is impossible with the remote commander.

To search while monitoring the sound

To move forward at high speed B
Keep ▶▶▷▷I depressed and release it at the desired point.

To move backward at high speed A
Keep I◁◁◀◀ depressed and release it at the desired point.

To search quickly
1 Press ⊳II to set the unit in pause mode.

2 Keep I◁◁◀◀ or ▶▶▷▷I depressed. The search speed increases, but there is no sound. Find the desired point by observing the display. Press ⊳II again at the desired point to play.

26

CD Playing

To locate a selection directly
Possible only with the remote commander

1 Set the TUNER/EQ/CD selector to CD.

2 Press the numeric button for the selection.

If the selection number is greater than 12
Use the >12 and 1 to 10 buttons. "10" functions as the figure "0."
e.g. To play from selection number 22, press >12, 2, 2.
To play from selection number 30, press >12, 3, 10.
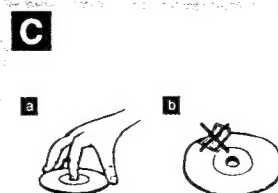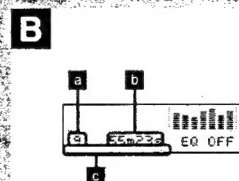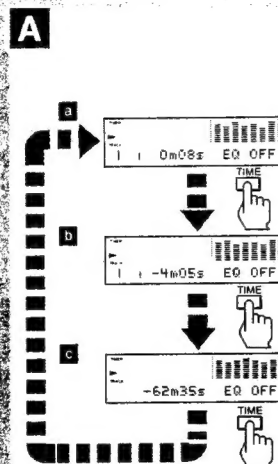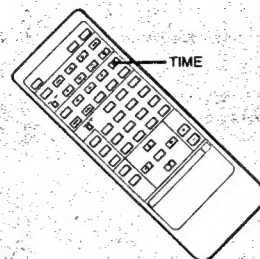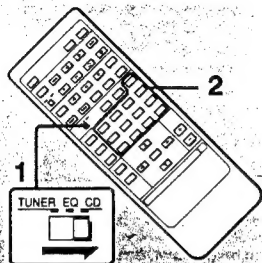
CD Playing

Information display

Possible only with the remote commander.

To change the time display A
Press TIME during play.
The display changes to give you the following information.

a Elapsed playing time of the current selection

b Remaining time in a selection. If the current selection number is over 20, "--m--s" is displayed.

c Remaining time of the disc.

To display the total playing time of the disc B
Press TIME during stop.
The following appears for about 4 seconds.

a Total number of selections

b Total playing time of the disc

c Track numbers

This information appears also when you close the tray by pressing ⏏ OPEN/CLOSE.

Notes on handling discs C
• To keep the disc clean, handle the disc by its edge. Do not touch the surface. a
• Do not stick paper or tape onto the disc. b
• Do not expose the disc to direct sunlight or heat sources such as a hot air duct, nor leave it in a car parked in direct sunlight as there can be a considerable rise in the temperature.
• After playing, store the disc in its case.
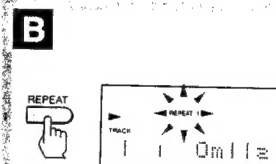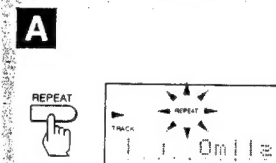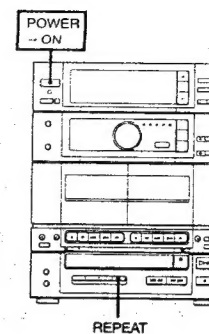
CD Playing

Playing Repeatedly — Repeat Play

To repeat all the selections A
Press REPEAT once during play so that "REPEAT" appears in the display.

To repeat a single selection B
Press REPEAT twice while playing the desired selection so that "REPEAT 1" appears in the display.
(Operable only in normal play and delete play mode)

To cancel repeat play
Press REPEAT so that neither "REPEAT" nor "REPEAT 1" appears.

Note
Repeat play function works also during;
• shuffle play
• delete play
• delete shuffle play
• program play.
Multi-disc program play (see page 44) cannot be repeated.

28   30   32
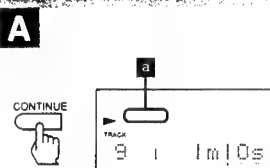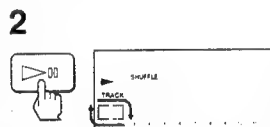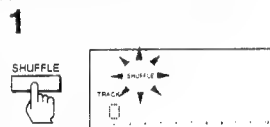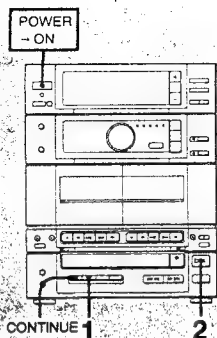
CD Playing

Playing in a Random Order — Shuffle Play

This operation is impossible with the remote commander.
Shuffle play function plays all selections in ▦ random order.

1 **Press SHUFFLE.**
"SHUFFLE" appears in the display.

2 **Press ▷II.**
" *CJ* " appears and then shuffle play starts.

To stop playing
Press ■.

To cancel shuffle play ▲
Press CONTINUE.
"SHUFFLE" disappears (▣), and play continues in normal play mode.
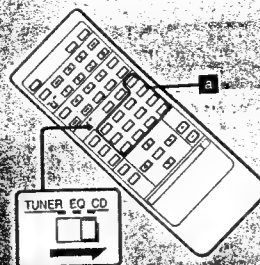
CD Playing

To play only the desired selections in a random order — Delete Shuffle Play
You can delete the undesired selections before or during shuffle play.
This operation is possible only with the remote commander.

To delete a selection
Press the numeric buttons (▣) for the selection you want to delete.
The number of the selection and "OFF" appears in the display.

To restore a selection which you have deleted
Press the numeric buttons for that selection.
The number of the selection and "ON" appears in the display.

To restore all selections which you have deleted
Press ■ during stop.

When you press REPEAT during shuffle play
After playing all the selections in a random order, shuffle play starts again in a different random order. During delete shuffle play, only the desired selections are played in a different random order.

To check the remaining time
Press TIME once to see the remaining time of the selection being played; twice to see the total remaining time of the selections to be played; once more to return to the initial display.
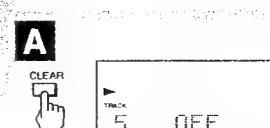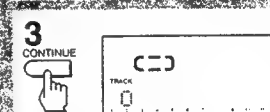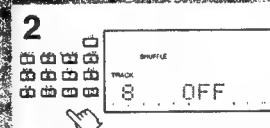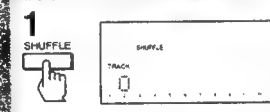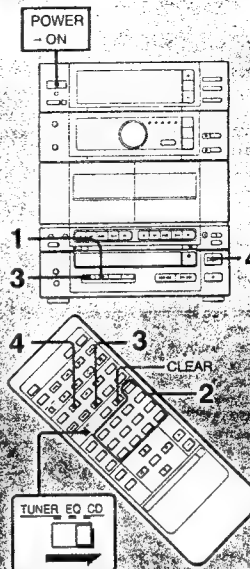
CD Playing

Playing Only the Desired Selections — Delete Play

You can delete the undesired selections before or during play.

To delete a selection before play

1 **Press SHUFFLE.**
"SHUFFLE" appears in the display.

2 **Press the numeric buttons for that selection.**
The number of the selection and "OFF" appears in the display.

3 **Press CONTINUE.**
"SHUFFLE" disappears.

4 **Press ▷II (or ▶ on the remote commander).**
Delete play starts.

To delete a selection during play ▲
Press CLEAR on the remote commander while that selection is being played.
The number of the selection and "OFF" appears in the display and the next selection starts.

To restore all the selections which you have deleted
Press ■ during stop.

3 **1** **2**

TUNER EQ CD

1

PROGRAM

TRACK PGM
0

2

[a] [b] [c]
TRACK STEP
5 3 13m46s
[d]

3

CD Playing

Playing in a Desired Order — Program Play

You can make a program for up to 24 selections in the order you want them to be played.

Programming selections directly
Possible only with the remote commander.

1 Press PROGRAM.
"PGM" appears in the display.

2 Press the numeric buttons for the desired selections in the desired order to be programmed.
To choose a number greater than 12, see page 28.

[a] Last programmed selection
[b] The order to be played
[c] Total playing time of selections
[d] Programmed selection numbers

3 Press ►.

To program selections while checking the total time
Use the I◄◄◄◄ and ►►►►I buttons (I◄◄ and ►►I buttons on the remote commander) instead of the numeric buttons to choose the desired selections. Choose a selection with the I◄◄◄◄ and ►►►►I buttons, check the total time, and then press PROGRAM while the selection number is flashing.

To program a pause
Press II.
"P" appears and the total playing time is reset to 0.

To stop play
Press ■.
To restart the same program play, press ►.

CD Playing

2

1

1 CHECK

2 CLEAR
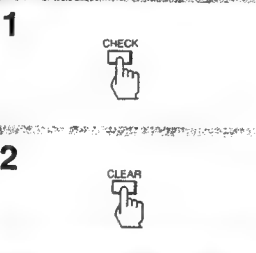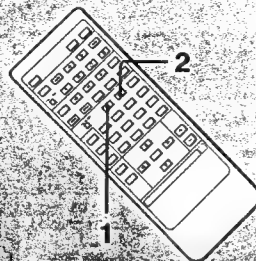
To cancel the program play
Press CONTINUE.
The program is erased and the play continues in normal play mode.

To check the program
Press CHECK.
Each time you press CHECK, the number of the selection and the order to be played appear in the display. After the last selection is displayed, "CHECK END" appears on the display.

To add a selection to the end of the program
Press the numeric buttons.

To erase a selection

1 Press CHECK so that the number of the selection you wish to erase appears.

2 Press CLEAR.

To erase the entire program
Press ■ once during stop; twice during play.
The program is also erased when you turn off the system.

If "– – m – – s" is displayed
• You have programed a selection the number of which is over 20.
• The total time has exceeded 100 minutes.

To check the remaining time
Press TIME once to see the remaining time of the selection being played; twice to see the total remaining time of the whole program; once more to return to the initial display.

CD Playing

POWER → ON

2 **1,4**

2 **3**

TUNER EQ CD

1

OPEN/ CLOSE

2

PROGRAM

TRACK PGM
0

3

TRACK PGM STEP
5 3 13m46s

4

OPEN/ CLOSE

PGM MULTI
DISC 2
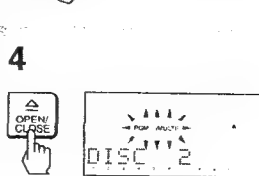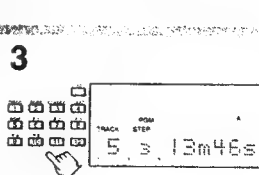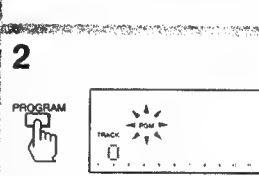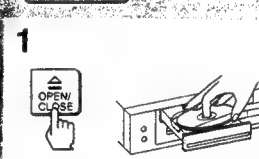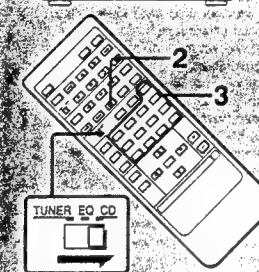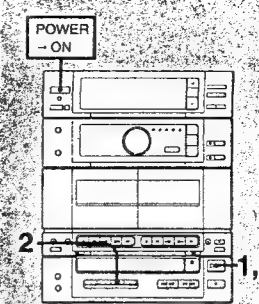
CD Playing

Designating the Playing Order of Up to 6 Discs — Multi-disc Program

You can make a program by designating up to 24 selections from up to 6 discs in the order you want them to be played. At the same time, you can adjust the total playing time of the program. This function is convenient for editing tapes.

To program selections directly
Possible only with the remote commander.

1 Insert the first disc.

2 Press PROGRAM.
"PGM" appears in the display.

3 Press the numeric buttons for the desired selection in the desired order to be programmed.

4 Remove the disc and insert the second disc.
"PGM (MULTI)" and "DISC 2" appear in the display.

5 Repeat steps 3 and 4 to program additional selections.
Up to 24 selections from up to 6 discs can be programmed.
The total playing time for all selections appears on the time display.

To play the program
Insert the first disc and press ►II (► on the remote commander).
When "DISC 2" appears in the display, replace the first disc with the second disc and press ►II. Continue replacing the discs until the last disc. When playback of the last disc is completed, "DISC END" appears in the display. The unit returns to the initial standby condition of program play from the first disc.
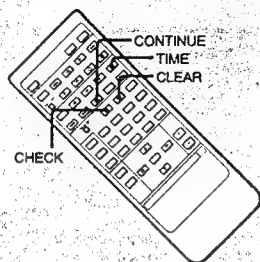
CD Playing

To stop playing
Press ■.

To cancel the program play
Press CONTINUE.

To check the program
Press CHECK.
Each time you press CHECK, the number of the disc and the selection appear. After the last selection is displayed, "CHECK END" appears in the display.

To erase a selection from the end of the program
1 Insert the last disc.

2 Press CLEAR.

Each time you press CLEAR, the selections are erased from the end of the program.
If you insert a pause in your program, you cannot erase the selections programmed before the pause.

To erase the entire program
Press ■ once during stop; twice during play.

Notes on multi-disc program
• You cannot use the repeat play function.
• Do not insert a pause in your program when you want to use the CD SYNC button.

If " --m--s" is displayed
• You have programmed a selection number over 20.
• The total time has exceeded 100 minutes.

To check the remaining time
Press TIME once to see the remaining time of the selection being played; twice to see the total remaining time of the programmed selections of the disc being played; once more to return to the initial display.

To check the number of the disc inserted
Press TIME during stop.
The number of the disc appears.

POWER
→ON

1 2

BAND

1

FM 87.50MHz

2

– TUNING +

AUTO

FM 88.00MHz

A
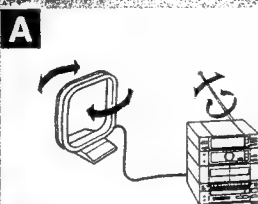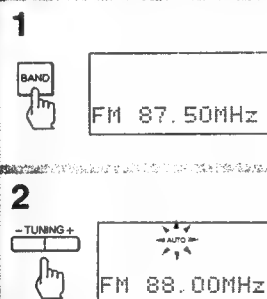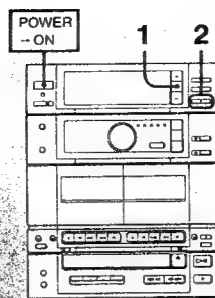
Radio

The automatic tuning enables you to find a station when its signal is strong enough.
When the signal is too weak, use the manual tuning. This operation is impossible with the remote commander.

Tuning in Automatically

1 Press BAND repeatedly until the desired band appears.
As you press BAND, the band changes as follows:
USA model:
FM → AM

European and U.K. model:
FM → MW → LW

Model for other countries:
FM → MW → SW

2 Keep TUNING – or + depressed for more than 1 second.
"AUTO" appears in the display and the unit tunes in a station automatically.

3 Repeat step 2 until the desired station appears.

Indicator in the display
TUNED: Appears when a station of sufficient signal strength is tuned in.
STEREO: Appears when an FM stereo program of sufficient signal strength is received.

Antenna adjustment A
For FM reception, adjust the length and direction of the telescopic antenna (except for MHC-700).
For AM (MW, LW and SW) reception, find the best location for the supplied AM loop antenna.

POWER
→ON

1 STEREO/MONO

2

BAND

1

FM 87.50MHz

2

– TUNING +

FM 88.00MHz
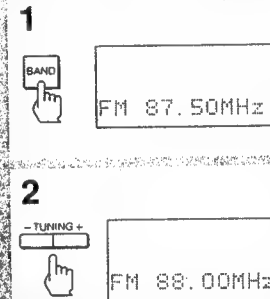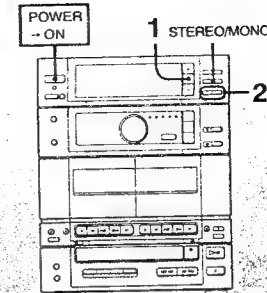
Radio

Tuning in Manually

1 Press BAND repeatedly until the desired band appears.

2 Press TUNING – or + repeatedly until the desired station appears.

When an FM program is noisy or hard to receive
Press STEREO/MONO so that "MONO" appears in the display. There will be no stereo effect, but the reception will be improved.
Press the button again to restore the stereo effect.

CONTINUE
TIME
CLEAR

CHECK

1

2

3

— 14 —
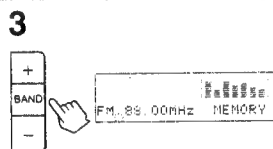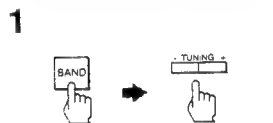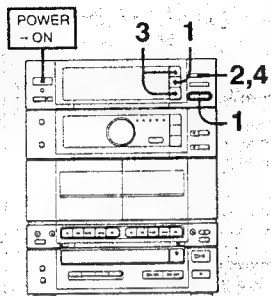
Radio

Storing Stations

You can store up to 20 FM stations and 10 MW stations and 10 LW (SW) stations (for the USA model, 20 FM stations and 10 AM stations) in a desired sequence, so that you can tune in the stored station directly by entering the preset station number.
This operation is not possible with the remote commander.

1 Tune in the desired station.

2 Press MEMORY/NEXT.
"MEMORY" and the preset station numbers appear in the display.

3 While "MEMORY" is on (for several seconds), press PRESET/TIMER – or + to select a desired preset number.

4 Press MEMORY/NEXT.
"MEMORY" disappears, the preset number appears and the station is stored.

5 Repeat step 1 to 4 for each station to be stored.

If you cannot store a station successfully
Press MEMORY/NEXT again so that "MEMORY" appears, and then proceed with steps 3 and 4 above.
Be sure to operate while "MEMORY" is on. (about 4 seconds.)

When you have selected the wrong preset station number
Press MEMORY/NEXT again and then proceed with steps 3 and 4.

To change the preset station
Store a desired station at the desired preset number by proceeding with the above steps. The station previously preset will be erased. Erasing only is not possible.
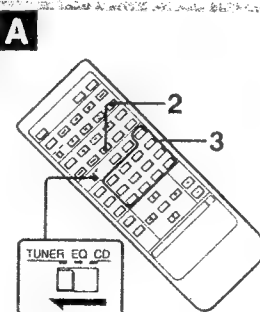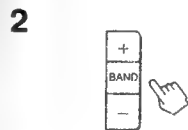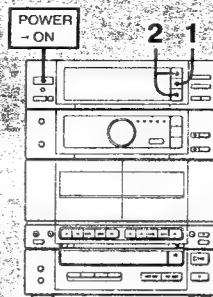
Radio

To Tune in a Preset Station

1 Press BAND to select a desired band.

2 Press PRESET/TIMER – or + to select the desired preset number.

To tune in a preset station directly A
Possible only with the remote commander.

1 Set the TUNER/EQ/CD selector to TUNER.
2 Press BAND to select a desired band.
3 Press the numeric button to select a desired preset station number.

1

2

A
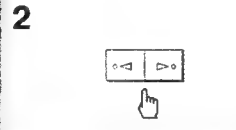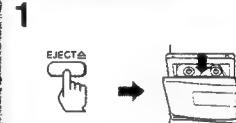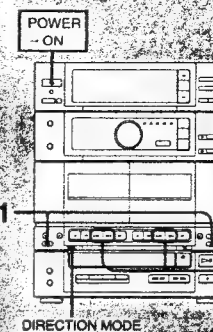
Tape Playback

Playback Operation

1 Insert a tape in deck A or B.

2 Press ▷ (for front side playback) or ◁ (for reverse side playback).

To stop playback
Press ■.

To stop for a moment during play
(Deck B only)
Press PAUSE II.

How to select the DIRECTION MODE position
To playback one side: set it to ⇄.
To play back both sides: set it to ⊂⊃.
To playback both decks in succession: set it to RELAY. See page 60.
The DIRECTION MODE setting is effective for both decks.

Playing back Automatically after Fast Winding – Auto Play

This function starts playback automatically from the beginning of the side after fast winding.

To start playback from the beginning of the front side
Press ▷ while keeping ◄◄ pressed.

To start playback from the beginning of the reverse side
Press ◁ while keeping ►► pressed.

When listening to the cassette recorded with the Dolby noise reduction system*
Set the DOLBY NR selector to ON. The setting is active for both decks. This system is provided with the DOLBY B NR system.

What is the Dolby NR system?
Dolby NR (noise reduction) system reduces tape hiss noise in low-level high-frequency signals. The system boosts these signals during recording and lowers them during playback.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and double-D symbol ▢▢ are trademarks of Dolby Laboratories Licensing Corporation.
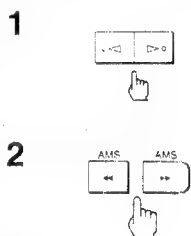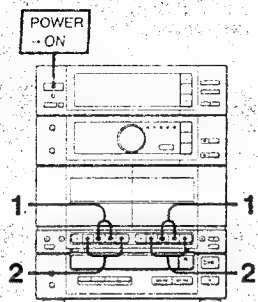
A

B

C
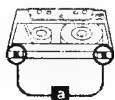
Tape Playback

Locating the Beginning of a Selection during Playback — Automatic Music Sensor (AMS)

The AMS locates the beginning of a selection by detecting the blank spaces between selections. To assure correct operation of the AMS, there must be a blank of 3 seconds or more between selections.

1 Press ◁ or ▷ to start playback.

2 Press ◄◄ or ►► referring to the following table.

Side of the cassette being played (Indication on the display)	Desired selection	
	Next selection	Selection being played
Front side (▷)	►►	◄◄
Reverse side (◁)	◄◄	►►

Notes on Cassettes

To protect the recording [A]
Break off the tab on the left shoulder on the cassette side of which recording is to be protected.

To re-record the cassette [B]
Cover each slot with plastic tape.

When using a type II (CrO₂) cassette, be careful not to cover the detector slots ([a]) which are necessary for automatic tape type detection. [C]
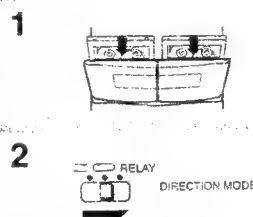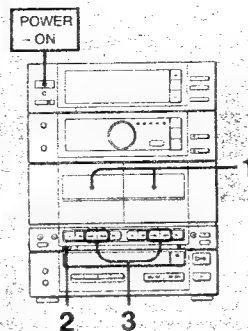
Tape Playback

Playing Both Decks in Succession — Relay Play

Relay play always follows the sequence below regardless of where playback starts. When playback of the reverse side of the tape in deck B is completed, the following sequence continues 4 more times.

Deck A (Front side) → Deck A (Reverse side)
↑ ↓
Deck B (Reverse side) ← Deck B (Front side)
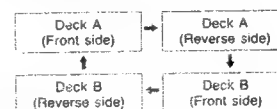
1 Insert recorded cassettes in both decks.

2 Set the DIRECTION MODE selector to RELAY.

3 Press ◁ or ▷ on either deck.

To stop relay play
Press ■.
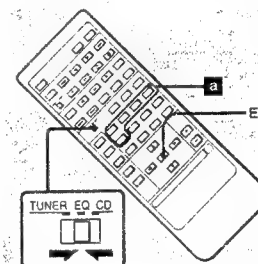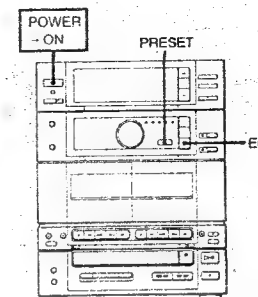
Using the Graphic Equalizer

Making Use of the Preset Equalizer Settings

When the system is shipped from the factory, 5 specially recommended settings of the graphic qualizer are stored. You can enjoy the effect of the equalizer by simply choosing from the preset settings according to the program source.

Press the desired preset equalizer setting button [a] on the remote commander by referring to the table below.

	Display	Applications
1	DISCO	Gives a sound similar to a disco surrounded by hard walls.
2	POPS	Vocal sound is intensified.
3	CLASSIC	For orchestral music
4	JAZZ	For jazz
5	BGM	For background music

You can also select the preset equalizer setting by pressing PRESET on the front panel repeatedly.

When you do not want to apply the equalizer effect [A]
Press EQ so that "EQ OFF" appears on the display.

JAZZ

A

EQ OFF

Using the Graphic Equalizer

Adjusting the Graphic Equalizer

This function allows you to adjust the sound by raising and lowering the level of specific frequency ranges. This operation is possible only with the remote commander.

1 Press EQ so that "EQ SET" appears in the display.

2 While the frequency range is flashing (for about 6 seconds), select the frequency range you wish to adjust using CURSOR CONTROL ► or ◄.

3 While the frequency range is flashing (for about 6 seconds), raise or lower the level of the frequency range with CURSOR CONTROL ▲ or ▼.

Confirming the effect of the adjustment
Press EQ.
You can compare the difference between the adjusted setting ("EQ ON" is displayed) and no equalizer effect ("EQ OFF" is displayed).

The sound you adjust
You can record the sound you have adjusted with the graphic equalizer and the S-SUR button (not supplied for FH-B170K).

1
ON/OFF
EQ

EQ SET

2
CURSOR CONTROL
◄ ►

3
CURSOR CONTROL
▲
▼

— 16 —
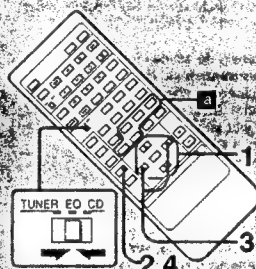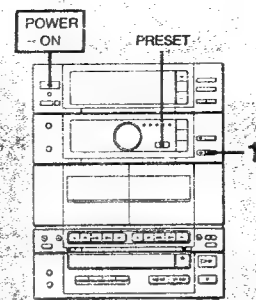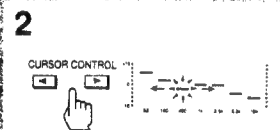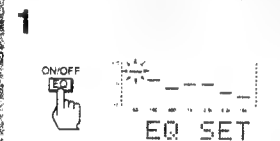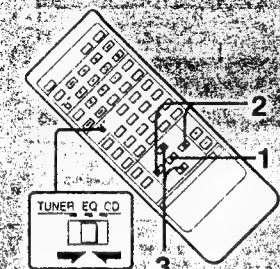
Using the Graphic Equalizer

Storing Your Individual Graphic Equalizer Settings – Personal File

By storing your individual graphic equalizer setting in the Personal File, you can easily call up the setting at any time. You can store up to 5 settings.
This operation is possible only with the remote commander.

1 Adjust the sound with the graphic equalizer and the S-SUR button (except for FH-B170K).
(See pages 64 and 22.)

2 Press MEMORY.
"FILE 1" appears and flashes.

3 While "FILE 1" is flashing (for about 4 seconds), press CURSOR CONTROL ◄ or ► to select a desired Personal File.

4 While the selected Personal File is flashing (for about 4 seconds), press MEMORY.
The selected Personal File stops flashing.
The equalizer setting is stored in the selected Personal File. The setting previously stored in the file is erased and replaced by the new setting.

Calling up the setting from the Personal File

Press the desired Personal File (F-1 to F-5) button ⬛ on the remote commander.
You can also select the Personal File by pressing PRESET on the unit repeatedly.

1
△
◄ ON/OFF EQ ►
▽

2
MEMORY
FILE 1

3
CURSOR CONTROL
◄ ►
FILE 2

4
MEMORY
FILE 2
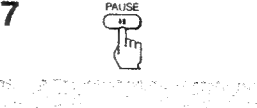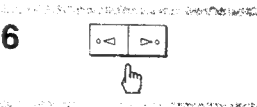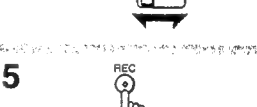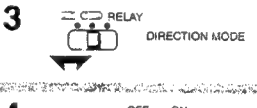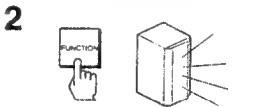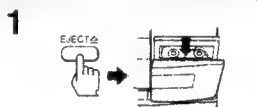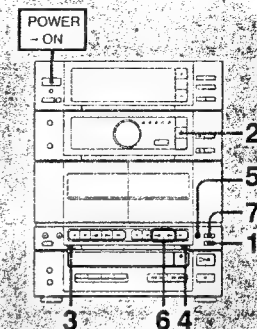
Recording

Recording Operation (Deck B)

Use TYPE I (normal) or TYPE II (CrO_2) tapes for recording.

1 Insert a blank tape into deck B.

2 Select a program source and play it.
To select the tuner, the CD player or the cassette deck, you do not have to press FUNCTION. You can select them directly by pressing the operation button (BAND, PRESET/ TIMER +/– or TUNING +/– to select the tuner, ▷‖ to select the CD player, and ▷ or ◁ to select the cassette deck).

3 Set the DIRECTION MODE selector.
To record one side, set it to ⇌.
To record both sides, set it to ⊂⊃.

4 Set to DOLBY NR switch to ON or OFF.

5 Press REC ●.
The deck B enters the recording pause mode.

6 If the desired direction indicator is not illuminated, select the side to be recorded.
Press ▷ (for front side recording) or ◁ (for reverse side recording)

7 Press PAUSE ‖.
The pause mode is released and recording starts.

To stop recording
Press ■.

Notes:
• Even if you set the DIRECTION MODE selector to ⊂⊃, recording stops at the end of the reverse side. To record on both sides, be sure to start with the front side.
• The recording level is fixed and cannot be adjusted manually.

1
EJECT ⏏

2
FUNCTION

3
⊂⊃ RELAY
DIRECTION MODE

4
OFF ON
DOLBY NR

5
REC

6
◁ ▷

7
PAUSE

Recording

Inserting a Blank Space during Recording

This operation is possible only with the remote commander.

1 Press ○ during recording at the position where the blank space is to be inserted.
REC indicator flashes and the tape runs without recording. After 4 seconds, the unit enters recording pause mode.

2 Press II at the position where you want to start recording again.
Recording restarts.

To make a blank of more than 4 seconds
Press ○ as long as needed.
REC indicator flashes faster after 4 seconds have elapsed. The tape pauses when ○ is released.

To make a blank less than 4 seconds
Press REC ● while REC indicator is flashing.

1

2

POWER
→ ON

3 ─── 5
1 ─── 1

2 4

1

2 ⇄ ⊂⊃ RELAY
DIRECTION MODE

3 HIGH SPEED

4 ◁ ▷

5 PAUSE II
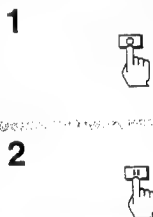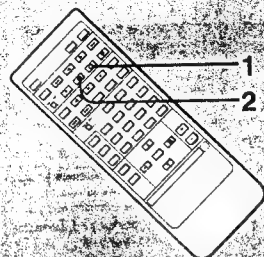
Tape Dubbing
(from deck A to B)

Dubbing the Whole Tape at High Speed

This operation is not possible with the remote commander.

1 Insert a recorded tape in deck A and a blank tape in deck B.

2 Set the DIRECTION MODE selector.
To dub on one side: set it to ⇄.
To dub on both sides: set it to ⊂⊃ or RELAY.
(See "Note on DIRECTION MODE setting page 74.")

3 Press HIGH SPEED.
The deck B enters recording pause mode.

4 Choose the same direction on both decks by pressing ◁ or ▷.
To dub on one side, choose ◁ or ▷.
To dub on both sides, choose ▷.

5 Press PAUSE II.
Dubbing starts.

To stop dubbing
Press ■.
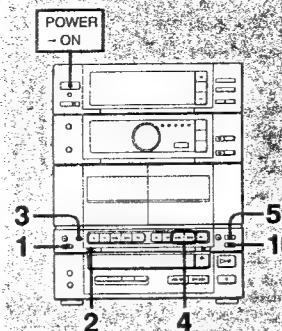
Tape Dubbing
(from deck A to B)

Note on DIRECTION MODE setting

Position	Operation
⇄	Dubbing stops at the end of the tape.
⊂⊃	When the tape in one deck comes to its end of the front side, it reverses immediately regardless of the tape position in the other deck.
RELAY	When the tape in one deck reaches its end of the front side, it stops until the other tape come to its end, and then both tape reverse together.

When dubbing starts from the reverse side in the RELAY mode
At the end of the reverse side, dubbing stops automatically.

Is it necessary to set DOLBY NR?
No. The tape in deck B is automatically recorded in the same state as the tape in deck A.

If the direction indicator on play button flashes 3 times and disappears
The tab(s) of the cassette inserted into deck B has (have) been removed. Dubbing is not possible on that cassette. Cover the slot with plastic tape. (See page 58.)

POWER → ON

1

2

3 ≈⊃ RELAY

DIRECTION MODE

4 REC

5

6

7 PAUSE

Tape Dubbing
(from deck A to B)

Manual Dubbing

1 Press FUNCTION to select the cassette deck.

2 Insert a recorded tape in deck A and a blank tape in deck B.

3 Set the DIRECTION MODE selector.
To dub on only one side; set it to ⇄.
To dub on both sides; set it to ⊃.

4 Press REC ●.
The deck B enters recording pause mode.

5 If the desired direction indicator is not illuminated, select the side to be recorded on the deck B.
Press ▷ (for front side recording) or ◁ (for reverse side recording).

6 Press ▷ or ◁ on deck A.
Playback starts.

7 Press PAUSE II.
Normal speed dubbing starts.

To stop dubbing
Press ■ on both decks.

Is it necessary to set DOLBY NR?
No. The tape in deck B is automatically recording in the same state as the tape in deck A.

Is it possible to listen to program sources other than tape during dubbing?
During high speed dubbing, yes. Any program source can be selected with the FUNCTION button.
During manual dubbing, no. The source changes to the function selected with the FUNCTION button and the tape playback cannot be dubbed.

POWER → ON

1 EJECT⏏

2 OPEN/CLOSE

3 EDIT/TIME FADE

4

→ HALF ⟷ C-46 ⟷ C-54
(23m00s) (27m00s)
⟵ C-90 ⟷ C-74 ⟷ C-60 ⟵
(45m00s) (37m00s) (30m00s)
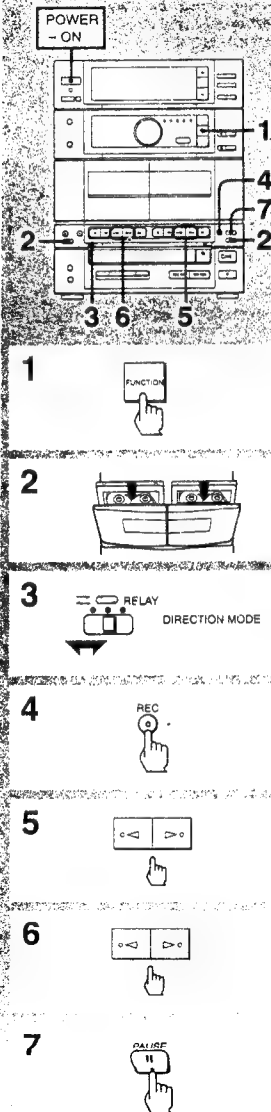
CD Recording

Fading Out at the Designated Time — Time Fade

You can have the disc play fade out at the end by designating the playing time so that the selection at the end of the tape fades out naturally without breaking abruptly in the middle. The player records the selections in the order they appear on the disc. 5 seconds before the designated time, the recording level falls gradually. At the designated time, the recording fades out and the CD player enters pause mode. This function works for both sides of the tape by designating the time once. This function works also during repeat, shuffle, and program play.

Time Fade operation
This operation is not possible with the remote commander.

1 Insert a blank tape into deck B.

2 Place a disc with the label side up, and close the tray.

3 Press EDIT/TIME FADE three times and display "TIME FADE".

4 Designate the tape length.

When you use a 46-, 54-, 60-, 74-, or 90-minute cassette tape
Press |◁◁◁◀◀ and ▶▶▷▷▷|.
As you press these buttons, the minute display changes as shown in the illustration.

When you choose "HALF"
The player fades out after playing just the half of the total playing time of the disc.

When you want to specify the recording time (of one side of the tape) more accurately
Press the numeric buttons on the remote commander. (Make sure to set the TUNER/EQ/CD selector to CD.)

Example: To specify the time of 11 minutes 30 seconds, press "1", "1", "3", and "10".
("10" functions as the figure "0".)

(to be continued)

---

5 ≈⊃ RELAY
DIRECTION MODE

6 REC

7

8 PAUSE II
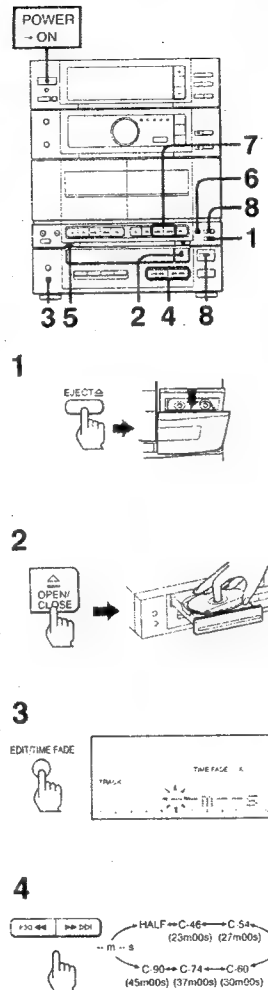
CD Recording

(continued)

5 Set the DIRECTION MODE selector.
To record on one side, set it to ⇄.
To record on both sides, set it to ⊃.

6 Press REC ●.
The cassette deck enters recording pause mode.

7 If the desired direction indicator on play button is not illuminated, select the side to be recorded.
Press ▷ (for front side recording) or ◁ (for reverse side recording)

8 Press PAUSE II of the cassette deck and ▷II of the CD player.
The pause mode is released, CD playing starts, and recording starts.

—18—
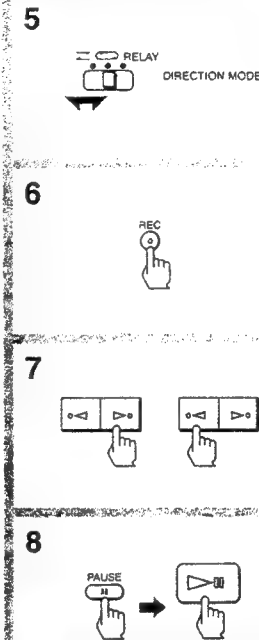
To stop recording
Press ■ of the cassette deck and the CD player.

When playback ends
The CD player fades out and enters pause mode at the designated time. "TIME FADE B" appears in the display. The cassette deck reverses automatically if you set the DIRECTION MODE selector to ⊂⊃.

If you want also to record on the reverse side of the cassette, press ▶II after the tape reverses.
When playback of the reverse side ends and fades out, the player enters the pause mode and the Time Fade is canceled.

To cancel the TIME FADE function
During stop, press EDIT/TIME FADE so that "TIME FADE" disappears.

When the playback of the disc ends during Time Fade
The Time Fade function is still active. If you place another disc, the recording can be continued and will fade out when the total playing time of the discs reaches the designated time.

About the remaining time during Time Fade
When you press TIME twice, the remaining time until the designated time is displayed.

If you press ◁◁◀◀ or ▶▶▷▷
Time Fade will be canceled.

A Front side/Face avant/
Cara frontal/正面/Voorkant

Reverse side/Face arrière/
Cara posterior/反面/Achterkant

B

POWER
→ ON

4 3   5 2 1

1 EJECT

2 OPEN/CLOSE

3 RELAY — DIRECTION MODE
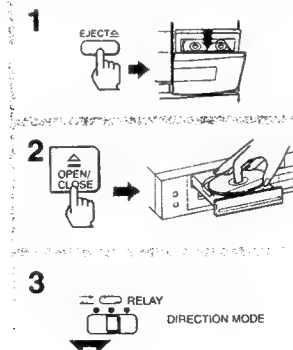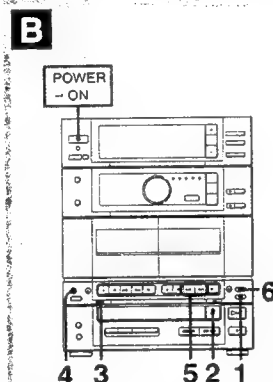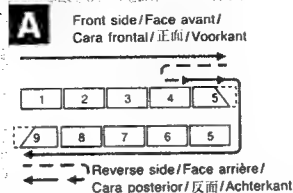
Recording the Entire Program on a Disc — Fade Edit

CD program playback and tape recording start simultaneously due to the Synchronized Start function. The selection at the end of the tape does not break abruptly in the middle, but fades out automatically (Fade Edit Function).

How the Fade Edit function works A
The player records the selections in the order on the disc. If the tape ends in the middle of the selection, the player rewinds the tape to the beginning of that selection. Then the selection is re-recorded so that it fades out naturally at the end of the tape.
If the recording is to be continued to the reverse side, the selection that faded out on the front side is recorded again from the beginning on the reverse side.

Fade edit operation B
This operation is not possible with the remote commander.

1 Insert a blank tape into deck B.

2 Place a disc with the label side up, and close the tray.

Note:
Make sure that the total number of selections and the total playing time appear in the display.

3 Set the DIRECTION MODE selector.
To record on one side, set it to ⇌.
To record on both sides, set it to ⊂⊃.

(to be continued)

4 CD SYNC

5

6 PAUSE

(continued)

4 Press CD SYNC.
The deck B enters recording pause mode.

5 If the desired direction indicator on play button is not illuminated, select the side to be recorded by pressing ◁ or ▷.
To record on the front side or on both sides, press ▷.
To record only on the reverse side, press ◁.

6 Press PAUSE II on deck B.
The recording starts. After about 10 seconds, the CD playback starts.

To stop recording
Press ■ of the cassette deck and/or the CD player.

Note:
When the tab on the cassette has been removed, the CD SYNC button does not operate.

Is it possible to listen to program sources other than CD during CD recording?
No. If you select another function, the CD play stops and the selected program source will be recorded.
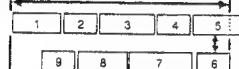
A Front side/Face avant/
Cara frontal/正面/Voorkant

1	2	3	4	5

9	8	7	6

Reverse side/Face arrière/
Cara posterior/反面/Achterkant

Front side/Face avant/
Cara frontal/正面/Voorkant

1	2	3	4	6

9	8	7	5
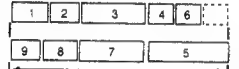
Reverse side/Face arrière/
Cara posterior/反面/Achterkant

B Front side/Face avant/
Cara frontal/正面/Voorkant
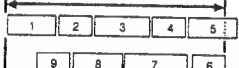
1	2	3	4	5

9	8	7	6

Reverse side/Face arrière/
Cara posterior/反面/Achterkant

Front side/Face avant/
Cara frontal/正面/Voorkant

2	3	7	9

8	6	5	4	1

Reverse side/Face arrière/
Cara posterior/反面/Achterkant

—20—
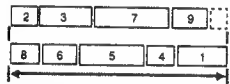
Editing the CD for Recording

The CD player automatically edits the selections on a disc according to the tape length. There are two ways of editing: Time Edit and Just Edit.

How the Time Edit function works
A

The CD player selects the selections so that the total recording time of the selections is within the tape length and so that the order of the selections changes as little as possible. This function is convenient when you know the available recording length of the tape.
The player selects the selections from the first one in the disc, summing up each playing time. When the total playing time exceeds the specified tape length, the last selection is eliminated and replaced with another selection which is not longer than the remaining time. The eliminated selection is recorded on the reverse side. If you do not want to miss recording some specific selections, you can select them beforehand.

How the Just Edit function works
B

The CD player chooses the selections so that the total recording time of the selections is within the tape length and so that you can record as many selections as possible by changing the order of the selections. This function is convenient when you want to record as many selections as possible.
The player selects the selections so that the total playing time best fits length of side A. Then the player selects from the remaining selections to record on side B. If you do not want to miss recording specific selections, you can select them beforehand.

Note:
You can edit only the selections from track numbers 1 to 20 in the disc using the Time Edit and Just Edit.

POWER
→ON

6 — 8
— 9
7 — 1

3,5 2 4

1
EJECT

2
OPEN/CLOSE

3
EDIT/TIME FADE

4
HALF←→C-46←→C-54
(23m00s) (27m00s)
—m—s
C-90←→C-74←→C-60
(45m00s) (37m00s) (30m00s)
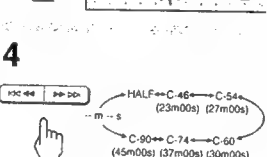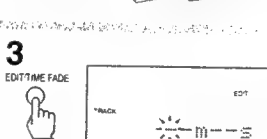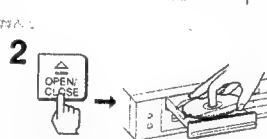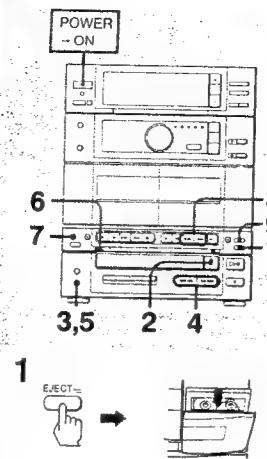
Time Edit and Just Edit operations
This operation is not possible with the remote commander.

1 Insert a blank tape into deck B.

2 Place a disc with the label side up, and close the tray.

3 Press EDIT/TIME FADE and display "EDIT" (Time Edit) or "JUST EDIT".
To choose Time Edit, press EDIT/TIME FADE once.
To choose Just Edit, press EDIT/TIME FADE twice.

4 Designate the tape length.

When you use a 46-, 54-, 60-, 74-, or 90-minute cassette tape
Press |◀◀◀◀ and ▶▶▶|.
As you press these buttons, the minute display changes as shown in the illustration.

When you choose "HALF" during Time Edit
The player divides the selections in the disc between side A and side B without changing their order and records them so that no selection is left out.

When you choose "HALF" during Just Edit
The player programs the selections by changing their order so that the recording time of one side of the tape is half the total playing time of the disc. However, the program of side A may be a little longer than that of side B because the player distributes all the selections.

When you want to specify the recording time (of one side of the tape) more accurately
Press the numeric buttons on the remote commander. (Make sure to set the TUNER/EQ/CD selector to CD.)

Example: To specify the time of 11 minutes 30 seconds, press "1", "1", "3", and "10".
("10" functions as the figure "0".)

(to be continued)

5
EDIT TIME FADE
a b c
d

6
RELAY
DIRECTION MODE

7
CD SYNC
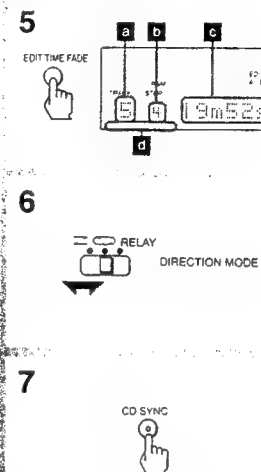
(continued)

5 **Press EDIT/TIME FADE.**
The selections to be recorded on one side are determined automatically. Then the display shows **a** the last selection to be recorded, **b** the programmed order, **c** total playing time, and **d** the selections to be recorded.

For recording on both sides
Press EDIT/TIME FADE again.
The selections to be recorded on the other side are determined.

To add selections (Link function)
If there is remaining time even after programming all the selections on the disc, the LINK indication and the selection numbers that can be recorded within the remaining time flash in the display window. You can choose from these selections to add to the program. When you want to record the selections of another disc, replace the disc. The selection numbers that can be recorded flash in the same way.
There are two ways of adding selections:
• Press the numeric buttons for the selection. (Make sure to set the TUNER/EQ/CD selector to CD).
That selection is added and if there is more space, "LINK" and the selection numbers flash again.
• Press EDIT/TIME FADE.
All the selections that can be recorded are programmed.

6 **Set the DIRECTION MODE selector.**
To record on one side, set it to ⇒.
To record on both sides, set it to ⊃.

7 **Press CD SYNC.**
The deck B enters recording pause mode.

(to be continued)

88

90

92

(continued)
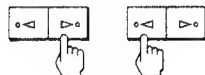
8 If the desired direction indicator on play button is not illuminated, select the side to be recorded by pressing ▷ or ◁.
To record on the front side or on both sides, press ▷.
To record only on the reverse side, press ◁.

9 Press PAUSE II button.
The recording starts. After about 10 seconds, the CD playback starts.

To stop recording
Press ■ on the cassette deck or the CD player.

Notes:
• Do not press any other buttons than those mentioned in the procedure during Time Edit or Just Edit.
• When the tab on the cassette has been removed, the CD SYNC button does not operate.

To select the desired selections preferentially
You can place priority on some selections to be recorded by pre-selecting them first using the program function of the CD player (see page 40.)

Note:
The Time Edit and Just Edit functions do not work when you program more than 20 selections on one disc.

To check the program
Press CHECK.
In the display window, "A" appears while checking the program for side A, and "B" appears while checking the program for side B.

If it takes time for programming during Just Edit
For some discs with many selections, it may take a while for programming. In that case, press ■ if you want to cancel the Just Edit operation.

To use the CD synchronized recording function with more than one disc
Use the multi-disc program function (page 44).
Press the CD SYNC button each time you change the disc.

— 21 —

94
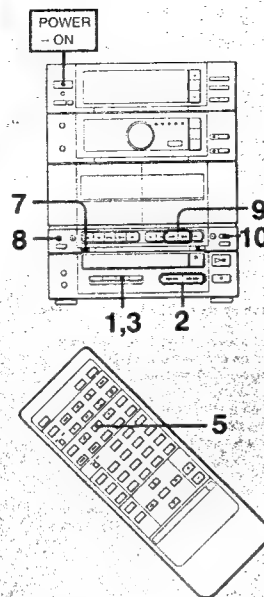
Programming the Selections while Checking the Total Playing Time — Program Edit

You can adjust the total playing time to the tape length.

1 Press PROGRAM.
"PGM" appears in the display.

2 Choose a desired selection to be programmed with I◁◁◀◀ or ▶▶▷▷I and check the time.

If satisfactory, go to the next step.
If not, repeat step 2 and choose another selection.

3 Press PROGRAM.
The selected selection number is memorized.

4 Repeat steps 2 to 3 to program desired selections for side A.
(Be sure that "A" is lit in the display.)

5 Press II (for the CD player) on the remote commander.
"P" appears in the display and the total playing time is reset to 0. "B" lights up.

(to be continued)

96
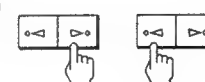
(continued)

6 Repeat steps 2 to 3 to program the desired selections for side B.

7 Set the DIRECTION MODE selector.
To record on one side, set it to ⇌.
To record on both sides, set it to ⊂⊃.

8 Press CD SYNC.
The deck B enters recording pause mode.

9 Select the side to be recorded by pressing ◁ or ▷.
To record on the front side or on both sides, press ▷.
To record only on the reverse side, press ◁.

10 Press PAUSE II of the cassette deck.
The recording starts. About 10 seconds, the CD playback starts.

To stop recording
Press ■ on the cassette deck or the CD player.

Note:
Be sure to program the selections so that the total playing time of each side does not exceed the tape length of one side.

98

100

Setting the Wake Up Timer

The power can be turned on automatically so that you can wake up with music. One hour later, the power is turned off automatically. The preset timer-on time remain until you reset it or you disconnect the power cord.

Before setting the timer
Make sure the clock is set correctly. (See page 20)

1 Press TIMER for more than 2 seconds.
"TIMER" and "ON" appear and the hour digits flash in the display.

2 Set the hour and minute of the timer-on time by pressing PRESET/ TIMER + or –, and MEMORY/NEXT.
The program source flashes.

3 Select the program source by pressing PRESET/TIMER + or –.
As you press the button (+ or –), the source changes as follows:

→TUNER←——→TAPE PLAY←
└———→ CD PLAY←———┘

To listen to the radio:
1) Press MEMORY/NEXT. The frequency display appears.
2) Press BAND to select the desired band.
3) Press PRESET/TIMER + or – to select the desired selection.

To listen to a tape: go to step 6.

To listen to a compact disc:
1) Press MEMORY/NEXT. The selection number display appears.
2) Press PRESET/TIMER + or – to select the desired selection. (only from track numbers 1 to 20)

(to be continued)

102

(continued)

4 Press MEMORY/NEXT.
The preset items appear sequentially.

5 Prepare the program source by inserting a disc or a tape.
• For listening to the radio:
You do not have to tune in the station.
• For listening to a tape:
Insert the tape in deck B.

6 Press POWER to turn off the system.
At the timer-on time, the system turns on automatically.

104
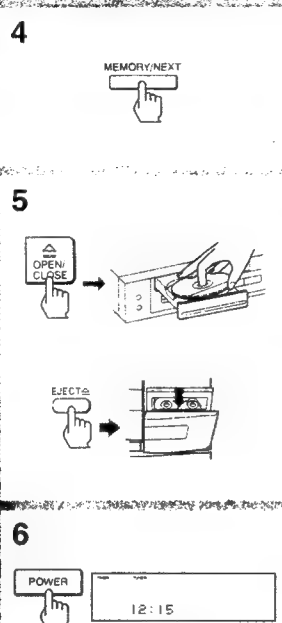
Setting the Recording Timer

The power can be turned on and off automatically so that you can record a radio program while you are out. The preset timer-on and -off times function only once.

Before setting the timer
• Make sure the clock is set correctly. (See page 20).
• Be sure to insert a cassette tape that is long enough.

1 Press TIMER REC for more than 2 seconds.
"TIMER REC" and "ON" appear and the hour digits flash on the display window.

2 Set the hour and minute of the timer-on time by pressing PRESET/TIMER + or –, and MEMORY/NEXT.
"OFF" appears and the hour digits flash again.

3 Set the hour and minute of the timer-off time by pressing PRESET/TIMER + or –, and MEMORY/NEXT.
The frequency display flashes.

(to be continued)

4

BAND

5

MEMORY/NEXT

6

EJECT⏏

7

⊐⊏ RELAY
DIRECTION MODE

8

OFF   ON
DOLBY NR

9

POWER   12:15
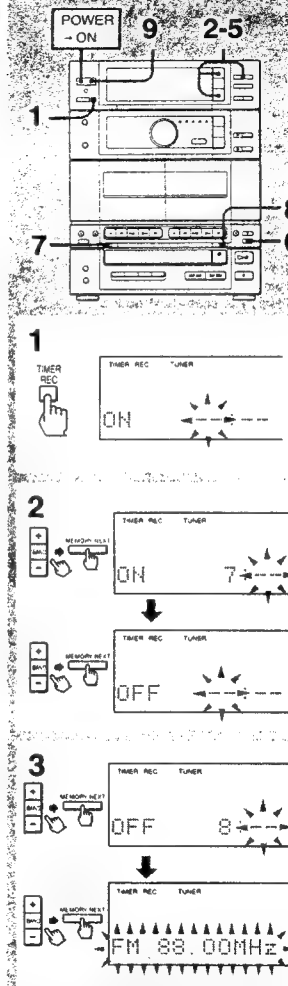
Timer-Activated Operation

(continued)

4 Press BAND and PRESET/TIMER + or − to tune in the desired preset station.

5 Press MEMORY/NEXT.
The preset items appear sequentially.

6 Insert a cassette in deck B.

7 Set the DIRECTION MODE selector.
To record on one side, set it to ⇄.
To record on both sides, set it to ⊂⊃.

8 Set the DOLBY NR to ON or OFF.

9 Press POWER to turn off the system.
Make sure that "TIMER REC" and "TUNER" are displayed. At the timer-on time, the system turns on automatically.

POWER
→ ON   **3** **2,4**

1

1 TIMER   TIMER REC

2 MEMORY/NEXT

3 + BAND −
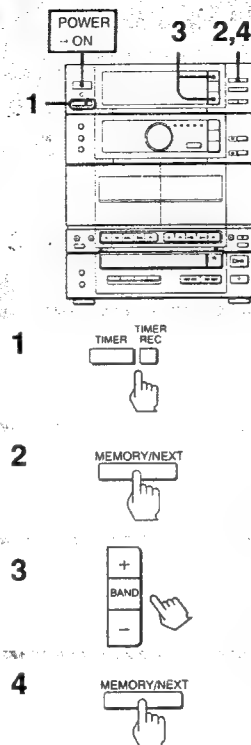
4 MEMORY/NEXT

Timer-Activated Operation

To change the time and program

1 Press TIMER (or TIMER REC for timer recording) for more than 2 seconds.

2 Press MEMORY/NEXT until the item to be changed flashes.

3 Press PRESET/TIMER + or − to change that item.

4 Press MEMORY/NEXT until the preset items appear sequentially.

When you do not want to use the timer program
Press TIMER (or TIMER REC) so that "TIMER" (or "TIMER REC") disappears.

When the power is already on at the preset time
The program source automatically changes to the preset one, even if you are playing another program source. However, when you have preset the recording timer, recording will not start even though the station is tuned in. Be sure to turn off the power before the preset time for timer recording.

Important

On the recording side of a tape during timer recording
Playback or recording always starts from the front side. When you want to record on only one side, be sure that the side you want to record on is facing you when you insert it.

2

1

2 SLEEP
SLEEP 90min   EQ OFF

Sleep Timer Operation

By setting the sleep timer, the system power can be turned off after the preset duration (up to 90 minutes).
This operation is possible only with the remote commander.

1 Play a desired program source.

2 Press SLEEP to select the desired duration in minute.
As you press SLEEP, the indication changes as follows:
90 → 80 → .... → 10 → ···

To turn off the system before the system is turned off by the sleep timer
Press POWER.

To check the remaining time before the sleep timer turns off the system
Press SLEEP once, and the remaining time appears. The display returns to the previous indication automatically after several seconds.

POWER → ON
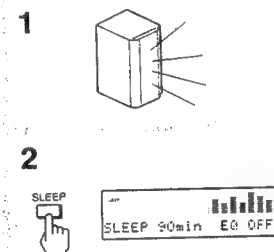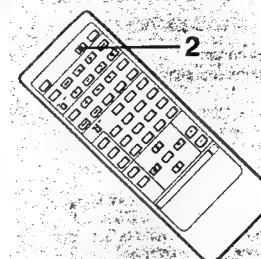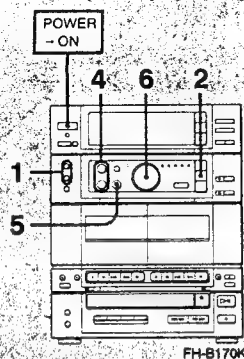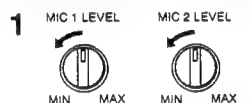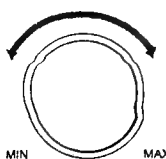
FH-B170K

Microphone Mixing

Mixing Operation

1 Turn down the MIC 1 and 2 LEVEL controls completely and connect microphones to the MIX MIC 1 and MIC 2 jacks. (only for FH-B170K) Connect a microphone to the MIX MIC jack. (for other models)

2 Press FUNCTION to select program source and play it.

3 Sing or speak into the microphone(s).

4 (only for FH-B170K) Adjust the microphone volume level with the MIC 1 and/or 2 LEVEL control(s).

5 (only for FH-B170k) Adjust the ECHO LEVEL control.

6 Adjust the VOLUME control.

When the mixing is over
Be sure to disconnect the microphone(s).

Recording the sound mixed with a source
1 Mix the sound as described above.
2 Insert a tape in deck B.
3 Start recording.

Recording from a microphone only
1 Press FUNCTION to select the CD player. If a CD is being played, press ■ to stop playing.
2 Start recording.

When only one microphone is used (for FH-B170K)
Connect it to the MIX MIC 1 jack and turn down the MIC 2 LEVEL completely.

To stop howling (acoustic feedback)
Placing the microphone too close to the speakers may cause howling. Move the microphone away from the speakers or change the direction it faces.

1 MIC 1 LEVEL MIC 2 LEVEL
MIN MAX MIN MAX
MIX MIC

2 FUNCTION

3

4 MIC 1 LEVEL MIC 2 LEVEL
MIN MAX MIN MAX

5 MIN MAX
ECHO LEVEL

6 MIN MAX

B

FH-B170K

A

KARAOKE PON

B

MPX
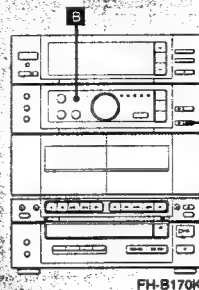
Singing along
(FH-B170K only)

Reducing the Vocals of a disc/tape – Vocal Reduction

You can sing with any desired stereo source by pressing the KARAOKE PON button which minimizes the singer's voice.

To reduce the vocal
Press the KARAOKE PON button so that the indicator turns on.

To cancel the vocal reduction
Press the button again so that the indicator turns off.

Notes on the vocal reduction
- Utilize stereo recorded sources. Not only would the singer's voice be reduced, but instrumental sounds may also be reduced with monaural recorded sources.
- The singers's voice may not be reduced completely for the following.
  - Stereo recorded sources containing only few instruments
  - Duet
  - Souces with strong echoes and chorus
  - Souces with singer's voice deviating from the center
  - Souces with singer's voice with extreme soprano or tenor
- When vocal reduction is used, the play sound will be monaural.

Singing Along with Multiplex Tapes

This feature can be made use of when you enjoy singing-along with microphones connected to the unit, while playing back a multiplex tape.
- To enjoy singing along, press MPX (multiplex) so that the indicator is turned on. You can hear only instrumental music and your voice through the microphone without recorded voice.
- To hear both instrumental music and recorded voice, press MPX again so that the indicator is turned off.

What is a multiplex tape?
Instrumental music and vocals were recorded respectively on the left channel and on the right channel. Therefore, when playing back a tape instrumental music comes from the left speaker and vocals come from the right speaker separately.

Maintenance

Cleaning the Heads and the Tape Paths A

Clean after every 10 hours of operation and before recording for optimum record/playback quality.

1 Press EJECT ▲ to open the cassette holders.

2 Slightly moisten the tip of ■ cotton swab with cleaning fluid or alcohol.

3 Wipe the parts shown in the illustration:
   a Capstan
   b Erase head
   c Record/playback head
   d Pinch roller

Do not insert a cassette until cleaned areas are completely dry.

A
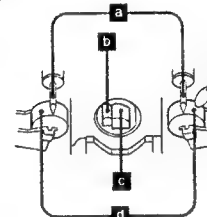
B

Demagnetizing the Heads

After 20 to 30 hours of use, it is necessary to remove residual magnetism built up on the head using any commercially available demagnetizer. For demagnetizing procedure, refer to the instruction manual of the demagnetizer.

Cleaning Discs B

When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for analog discs.

Cleaning the Cabinet

Use a soft cloth slightly moistened with mild detergent solution.

SECTION 3
DISASSEMBLY

NOTE : Follow the disassembly procedure in the numerical order given.

3-1. CASE

❶ BVTP 3 × 10

❷ screw (case) (M3 × 8)

case assy

front panel assy

H170, H170K model

❸ BVTT3 × 10

H170, H170K model

❹ ANT1

❶ BVTP3 × 10

❷ screw (case) (M3 × 8)

❶ BVTP3 × 10

3-2. POWER BLOCK

❸ BVTT3 × 6

❷

❶

A

A

power board

❸ BVTT3 × 6

❸ BVTT3 × 6

❸ BVTT3 × 6

transformer board

T101

3-3. MAIN BOARD

❶ nylon ribet (3.5 φ)

main board

❷ BVTT3 × 6

3-4. CD MECHANISM BLOCK

❶ BVTT3 × 6
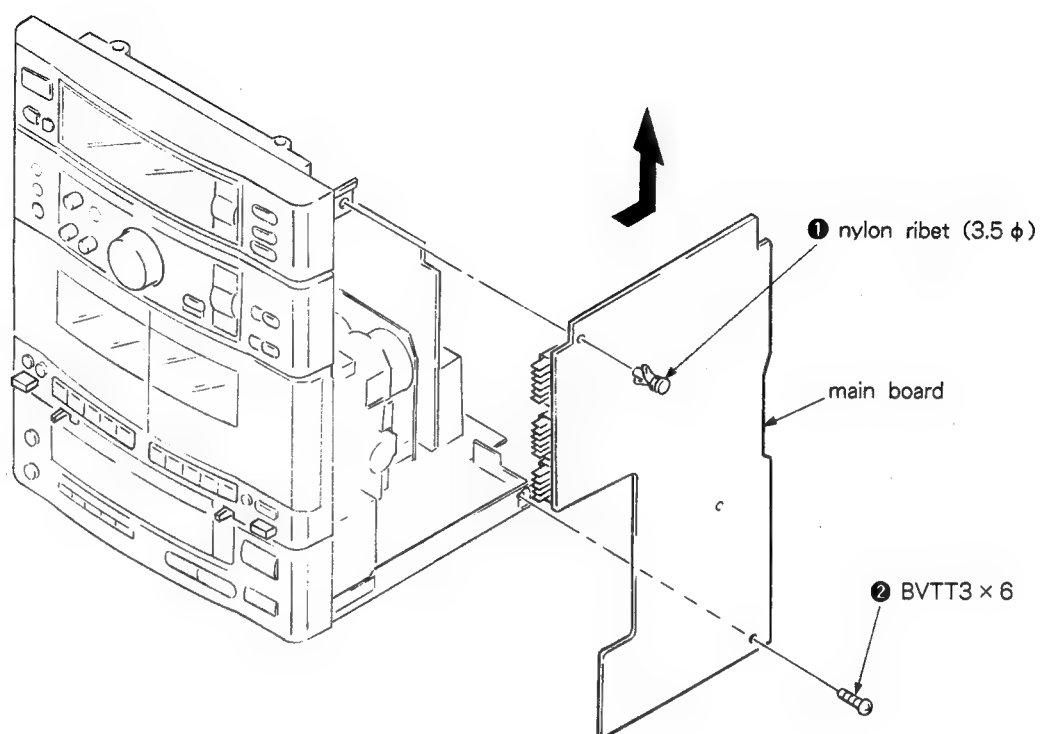
❷ CD mechanism block

3-5. TC MECHANISM BLOCK

To mechanism block

❺

❹ BV (2.6 × 8) TAPPING

❶

❷ cassette lid assy

❸ BVTT3 × 6
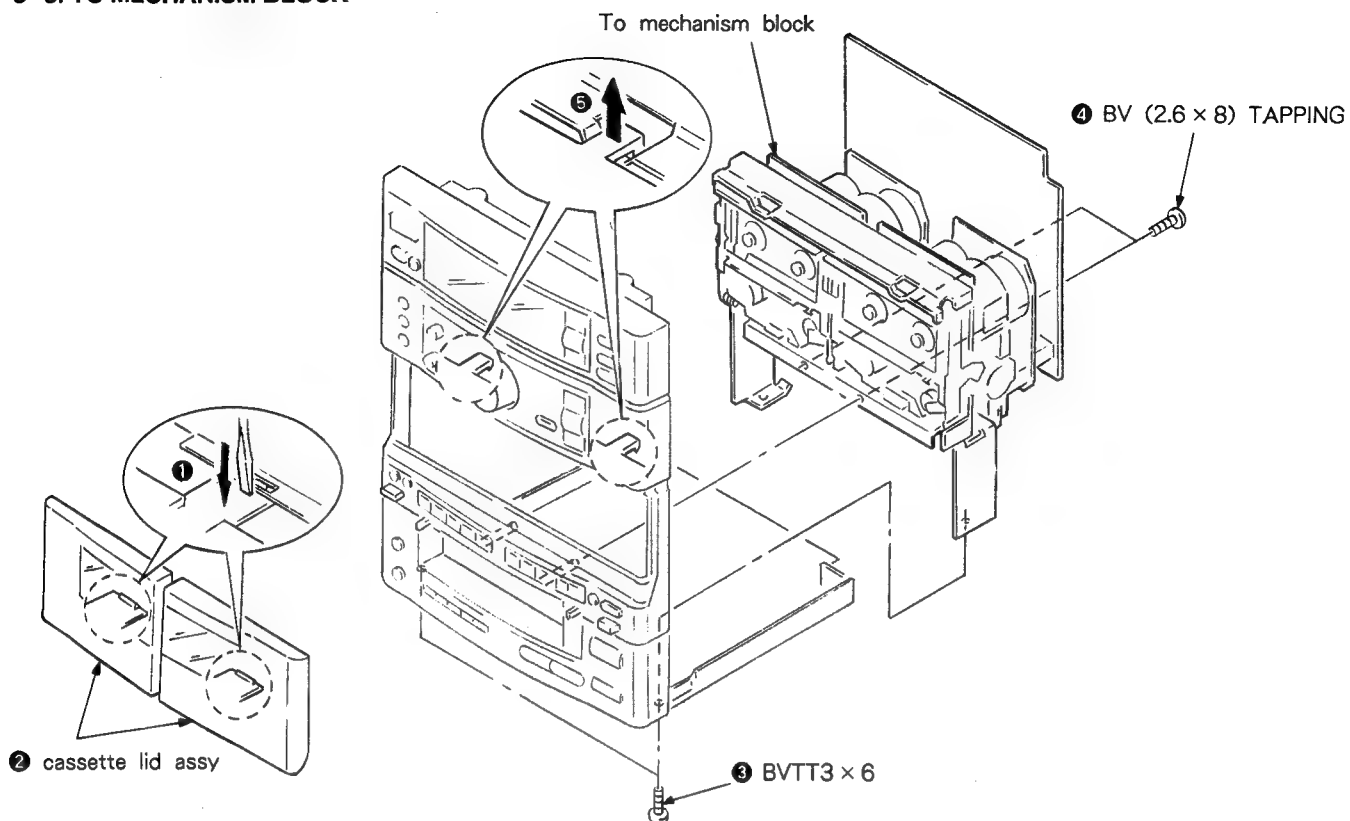
3-6. VOLUME/MIC HP/DISPLAY/SW BOARD

❶ BV (2.6 × 8) TAPPING

front panel assy

❺ mic hp board

❼ sw board

❶ BV (2.6 × 8) TAPPING

❶ BV (2.6 × 8) TAPPING

❻ display board

❶ BV (2.6 × 8) TAPPING

❹ volume board

❷ case bracket

❸ nut
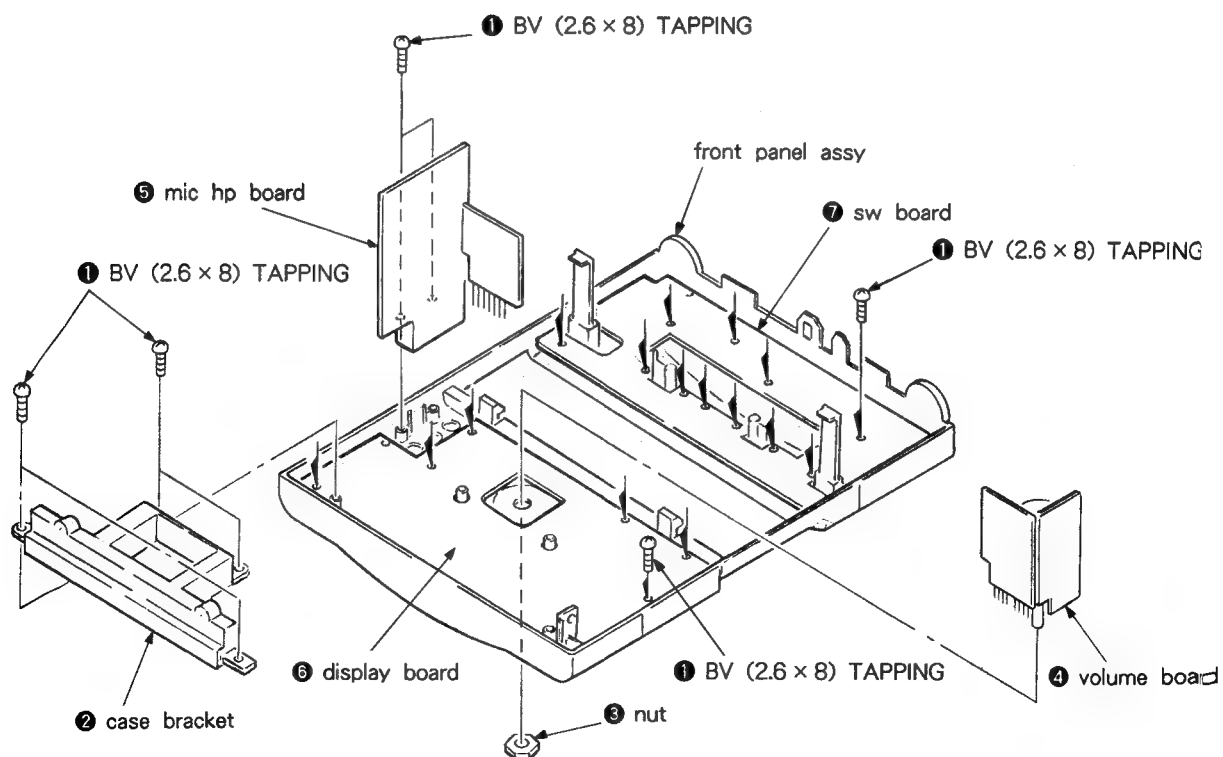
SECTION 4
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab:

   record/playback head   pinch roller
   erase head   rubber belt
   capstan   idler

2. Demagnetize the record/playback head with a head demagnetizer.
   (Head demagnetizer do not approach for the erase head.)
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustment should be performed with the rated power supply voltage unless otherwise noted.

● Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102C	35 to 60g • cm (0.49 to 0.83oz • inch)
Forward back tension	CQ-102C	2 to 6g • cm (0.028 to 0.08oz • inch)
Reverse	CQ-102RB	35 to 60g • cm (0.49 to 0.83oz • inch)
Reverse back tension	CQ-102RB	2 to 6g • cm (0.028 to 0.08oz • inch)
FF / REW	CQ-201B	70 to 110g • cm (0.98 to 1.52oz • inch)

● Timer Test Mode

When BAND, SHIFT and PRESET/TIMER+buttons are pressed at the same time the following time test operation is performed. After the operation, it becoms in the system reset mode. Take care that the frequency preset to the tuner is initialized.

1) POWER OFF
2) Timer set   Clock   AM10 : 23
             Timer ON   AM10 : 24
             Timer OFF   AM10 : 31
             Function   TUNER
3) FL tube display (FL1100)


```
        ┌─────────────────────┐
        │      All light      │
        └─────────────────────┘
              │   for 2 seconds
        ┌─────────────────────┐
        │    "AM 10 : 23"     │
        └─────────────────────┘
              │   for 0.5 second
        ┌─────────────────────┐
        │    "AM 10 : 24"     │
        └─────────────────────┘
              │   for 0.5 second
        ┌─────────────────────┐
        │      "TUNER"        │◄────── POWER ON
        └─────────────────────┘
              │   for 2 seconds
        ┌─────────────────────┐
        │    Last channel     │
        └─────────────────────┘
              │   for 1 second
        ┌─────────────────────┐
        │ "AM 00 : 00" flashing│◄───── POWER ON
        └─────────────────────┘
```

4) Finish

SECTION 5
ELECTRICAL ADJUSTMENTS

DECK SECTION

1. The adjustment should be performed in the publication.
   (Be sure to make playback adjustment at first.)
2. The adjustment and measurement should be performed for both L-CH and R-CH.
   ● Switch position
   DOLBY NR switch : OFF

● Test Tape

Tape	Contents	Use
P-4-A100	10kH, −10dB	Head Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment
WS−48B	3kHz, 0dB	Tape Speed Adjustment

Record/Playback Head Azimuth Adjustment

DECK A   DECK B

Procedure :
1. Forward Playback Mode
   Reverse Playback Mode

test tape
P-4-A100
(10kHz, −10dB)

VTVM

TP201

set
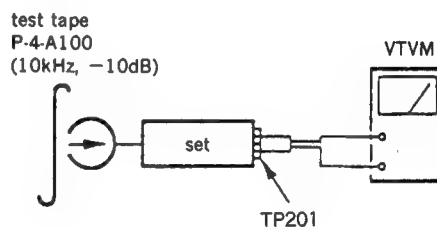
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw <u>until both of output levels match together within 1dB.</u>

3. Playback Mode

test tape
P-4-A100
(10kHz, −10dB)

Screen pattern				
in phase	45°	90°	135°	180°
good			wrong	
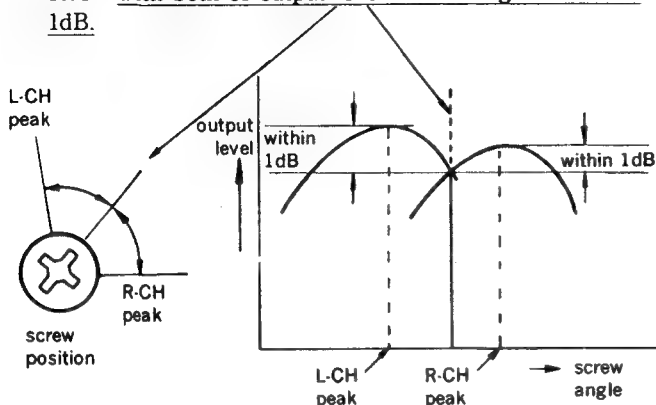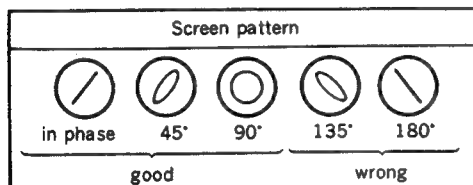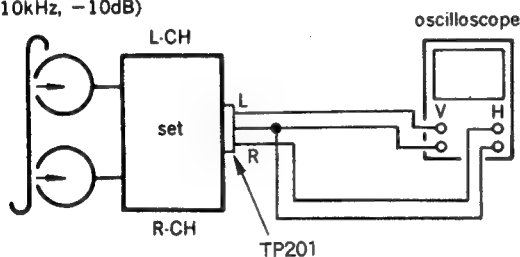
4. Change the review playback mode and repeat the steps 1 to 3.
5. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location :

—record/playback head (deck A and B)

forward side   reverse side
Adjustment screws

forward   reverse
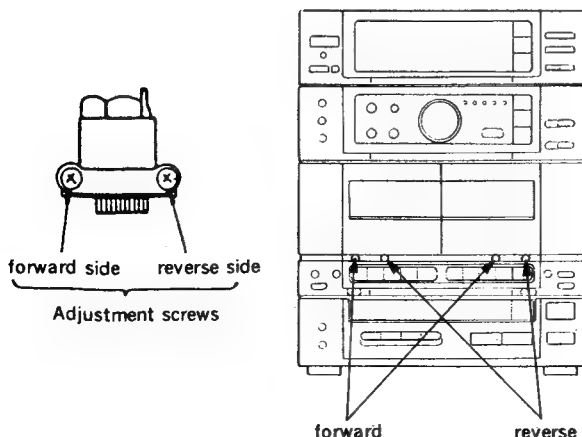
Tape Speed Adjustment | DECK A | | DECK B |

Procedure :
• Perform high speed adjustment before normal speed adjustment.
 Mode : playback

test tape
WS-48B
(3kHz, 0dB)

frequencny counter

TP201
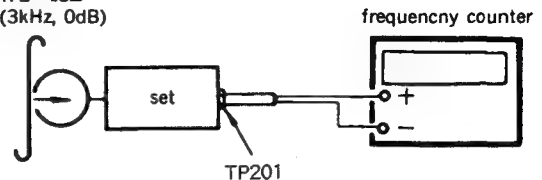
Speed	Deck	Adjustment	Frequency counter
※ High	A	RV72A	5,970 to 6.030Hz
	B	RV72B	
Normal	A	RV71A	2,985 to 3,015Hz
	B	RV71B	

※ Continue to press HIGH SPEED DUBBING switch (S1523) in playback mode : High speed playback.

Frequency difference between the begining and the end of the tape should be within ±1.5%.
Adjustment Location: MD-A and MD-B boards.

Playback Level Adjustment | DECK A | | DECK B |

Procedure :
 Mode : playback

test tape
P-4-L300
(315Hz, 0dB)

VTVM

TP201
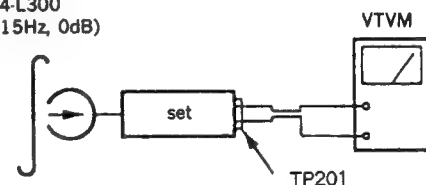
Deck A is RV11A (L-CH) and RV21A (R-CH), deck B is RV11B (L-CH) and RV21B (R-CH) so that adjustment within adjustment level as follows.

Adjusment Level :
LINE OUT level : −8.2dB to −7.2dB (0.301 to 0.338V)
Level Difference between Channels : within 1dB

Confirm the DOLBY OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location : MD-A and MD-B boards

Record Bias Adjustment DECK B

Procedure:

1. record mode

AF OSC   blank tape CS-123

attenuator

set

600Ω

TP101

1) 315Hz }
2) 10kHz } 31.6mV (−23.8dB)

2. playback mode

recorded portion   VTVM

set

TP201
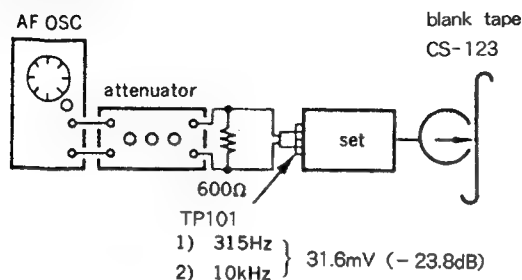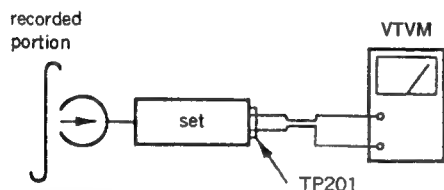
Confirm playback the signal recorded in step 1 become adjustment level as follows.

If these levels do not adjustment level, adjusment the RV12 (L-CH) and RV22 (R-CH) to repeat step 1 and 2.

Adjusment level: Playback output of 315Hz to playback output of 10kHz: −0.5dB to 0.5dB.

Adjustment Location: MD-B board

Record Level Adjustment DECK B

Procedure:

1. record mode

AF OSC   blank tape CS-123

attenuator

set

600Ω

TP101

315Hz, 31.6mV (−23.8dB)

2. playback mode

recorded portion   VTVM

set

TP201
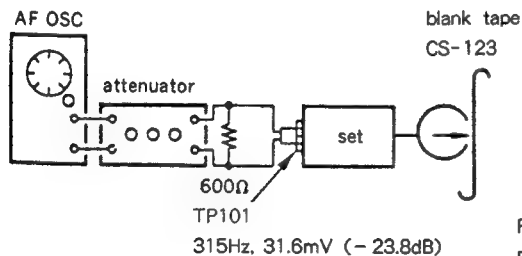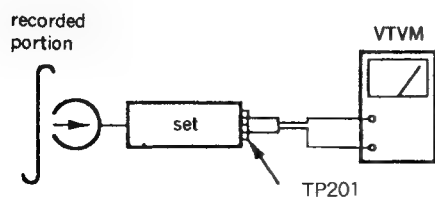
Confirm playback the signal recorded in step become adjustment level as follows.

If these levels do not adjustment level, adjusment the RV201 (L-CH) and RV301 (R-CH) to repeat step 1 and 2.

Adjusment Level:
LINE OUT level: −23.8dB ± 0.5dB (29 to 33.4mV)

Adjustment Location: main board

Adjustment Location:

Mechanism deck − rear side −
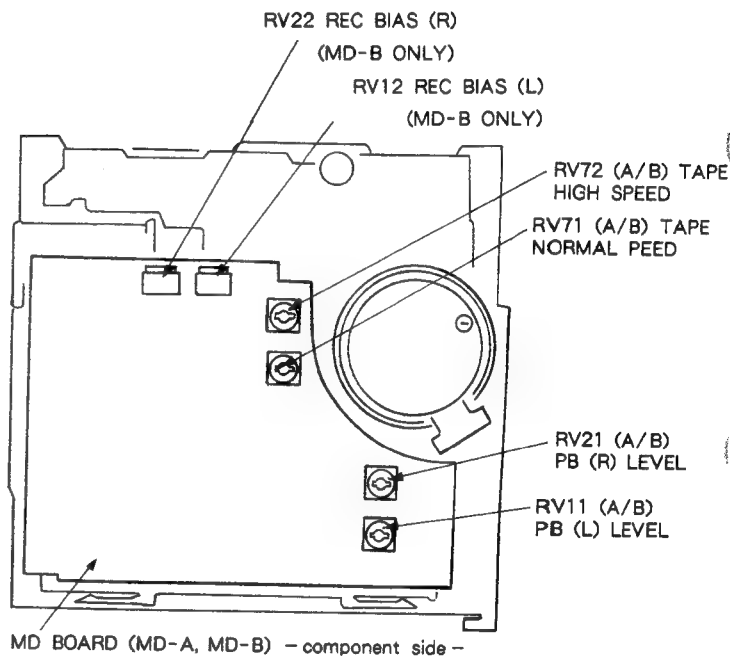
RV22 REC BIAS (R)
(MD-B ONLY)

RV12 REC BIAS (L)
(MD-B ONLY)

RV72 (A/B) TAPE HIGH SPEED

RV71 (A/B) TAPE NORMAL PEED

RV21 (A/B) PB (R) LEVEL

RV11 (A/B) PB (L) LEVEL

MD BOARD (MD-A, MD-B) − component side −

sub board − component side −
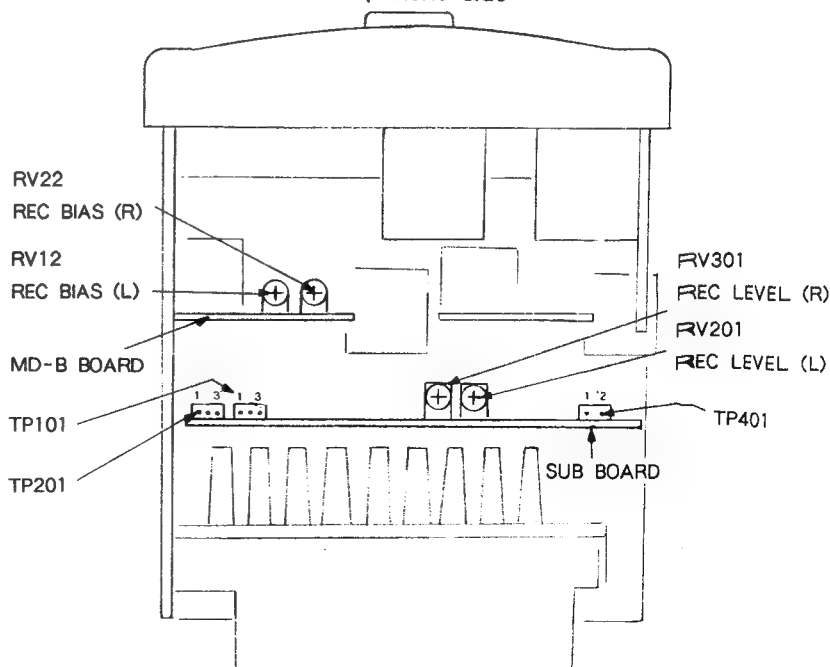
RV22 REC BIAS (R)

RV12 REC BIAS (L)

MD-B BOARD

TP101

TP201

RV301 REC LEVEL (R)

RV201 REC LEVEL (L)

TP401

SUB BOARD

—30—

TUNER SECTION

FM SECTION ADJUSTMENTS

Setting :

FM RF signal generator

75Ω coaxial

set

Carrier frequency : 98MHz
modulation : 1kHz, 75kHz deviation

FM ANTENNA terminal (TB1 or TB2)

VOM (DC range)

TP81 1 3
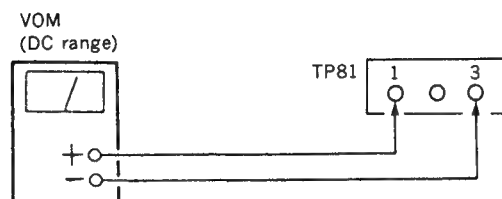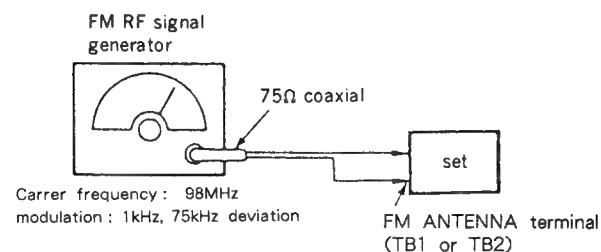
FM Discriminator Alignment (NULL Check)

Band : FM

Procedure :
1. Supply a 1mV (60dBμ) 98MHz signal from the ANTENNA terminal.
2. Tune the to 98MHz.
3. Adjust IFT82 for 0V reading on the VOM.

Note : FM tuned indication lighting level adjustment should be made after FM discriminator alignment.

Adjustment Location: main board

FM Tuned Indication Lighting Level Adjustment

Band : FM

Procedure:
1. Supply a 24 μV (25dBμ) 98MHz signal from the ANTEN-NA terminal.
2. Tune the set to 98MHz.
3. Adjust RV81 so that the TUNED light up.

• Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by trimmer capacitors.

AM SECTION ADJUSTMENTS

Setting :

AM RF signal generator

loop antenna A

loop antenna B

set

30% amplitude modulation by 400Hz signal
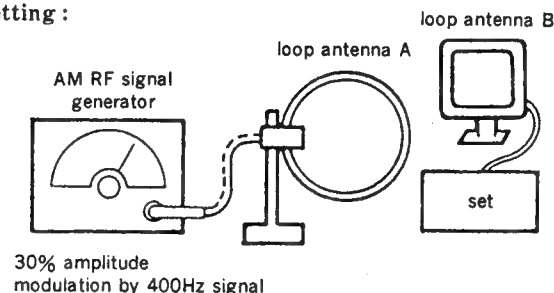
MW Tuned Indication Lighting Level Adjustment

Band : MW

Procedure:
1. Set loop antenna A so that the loop antenna, B input level becomes 0.45mV (55dBμ)
2. Tune the set to 999kHz.
3. Adjust the RV82 so that the TUNED light up.

SW OSC Voltage Adjustment

Band : SW

Procedure :
1. Connect the VOM to TP (OSC).
2. Tune the set to 5.95MHz.
3. Adjust T2 for 0.9 to 1.1V reading on the VOM.
4. Tune the set to 17.90MHz.
5. Adjust CT22 for 8.3 to 8.7V reading on the VOM.

SW Tracking Adjustment

Band : SW

Procedure :
1. Cornect the VOM to speaker terminal.
2. Adjust for a maximam reading on VOM.

Signal generator and Set frequency	Adjustment part
7.0MHz	T1
17.0MHz	CT21

Adjustment Location : main board —component side—

RV81
FM TUNED INDICATION
LIGHTING LEVEL ADJ

IFT 82
FM DISCRIMINATOR
ALIGNMENT

【MAIN BOARD】(COMPONENT SIDE)

TB2
ANTENNA

IC5

TP81

TB1
ANTENNA

FE1

IFT81

IC81

CT21
SW TRACKING
ADJ

FE2

RV82

CT22
SW OSC
VOLTAGE ADJ

LPF82 LPF81

T1
SW TRACKING
ADJ

RV82
MW (AM) TUNED
INDICATION LIGHTING
LEVEL ADJ

T2
SW OSC
VOLTAGE ADJ
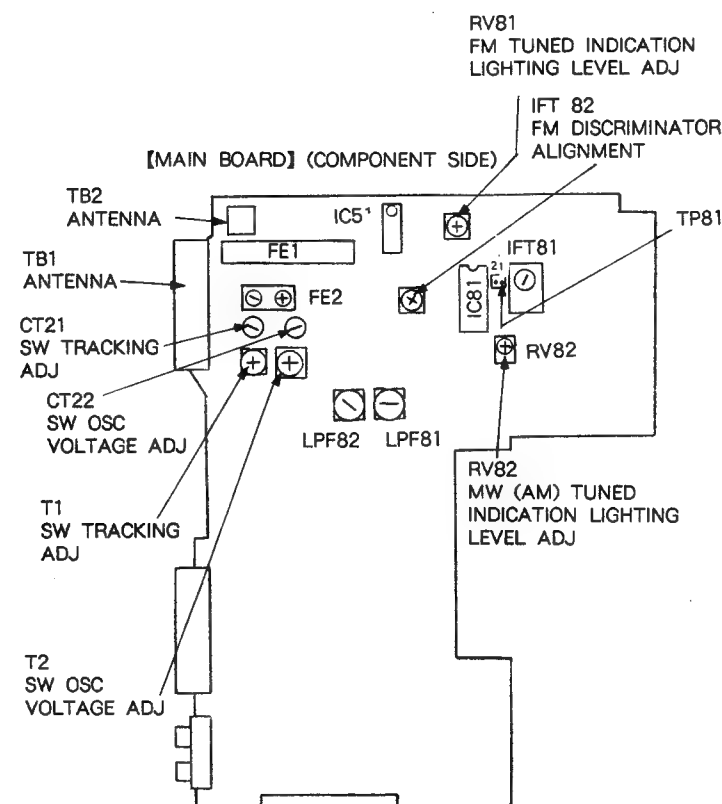
CD SECTION

Note :
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check

oscilloscope

BD board

TP (FEO)
TP (VC)

Procedure :
1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1Vp-p.

S curve waveform   symmetry

A
B
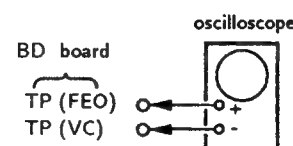
within 3 ± 1Vp-p

5. After check, remove the lead wire connected in step 2.

Note : • Try to mesure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level (

Note :
1. CD Block
out adjust
order give
2. Use YEDS
indicated.
3. Use the o
pedance.
4. Confirm a

check R

Note :
Clear RF si
can be clear
form.

RF signal w

E-F Balan

Procedure:
1. Connect
(TEO)
2. Connec
BD boa
3. Turn Po
4. Put disc
5. Confirm
metrica
and ch

Traverse

0V

6. Remove

---

ation : main board —component side—

RV81
FM TUNED INDICATION
LIGHTING LEVEL ADJ

IFT 82
FM DISCRIMINATOR
BOARD] (COMPONENT SIDE) ALIGNMENT

IC5'
FE1
IFT81
TP81
IC81
FE2
RV82
RV82
LPF82 LPF81

RV82
MW (AM) TUNED
INDICATION LIGHTING
LEVEL ADJ

Note :

1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check

oscilloscope

BD board
TP (FEO)
TP (VC)

Procedure :

1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1Vp-p.

S curve waveform   symmetry

A
within 3 ± 1Vp-p
B

5. After check, remove the lead wire connected in step 2.

Note : • Try to mesure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

oscilloscope

BD board
TP (RF)
TP (VC)

Procedure :

1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :
Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform

VOLT/DIV : 200mV
TIME/DIV : 500nS

level :
$1.2^{+0.2}_{-0.4}$ Vp-p

E-F Balance Check
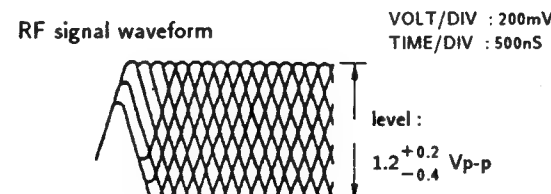
oscilloscope
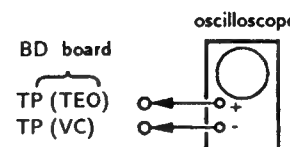
BD board
TP (TEO)
TP (VC)

Procedure:

1. Connect test point TP (ADJ) to ground and TP (TEO) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

Traverse oscilloscope

0V

symmetry
level : 2 ± 1Vp-p
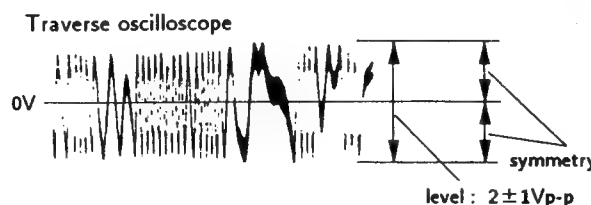
6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PCLK) with lead wire.

Main board   frequency counter

TP (PCLK)

2. Turn Power switch on.
3. Confirm that reading on frequency counter is
4. 3218MHz.

Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Locations :
[BD board]

CXA1372AQ

48   37
1   36
12   25
13   24
(TOP VIEW)

CXD2500AQ

64   41
65   40
80   25
1   24
MARKING SIDE VIEW

GP1U59XB

1 2 3
1 Vout
2 Vcc
3 GND

LA6525M

30   16
1   15
(TOP VIEW)

M5218AFP

32   17
1   16

PST572E

IN   OUT
GND

—32—

—33—

SECTION 6
DIAGRAMS

RF PLL Free-run Frequency Check

Procedure :

1. Connect frequency counter to test point (PCLK) with lead wire.

2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4. 3218MHz.
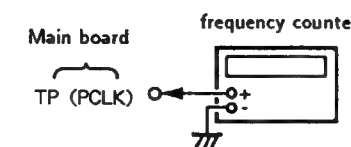
Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem.

Therefore, do not perform, this adjustment.

Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Locations :
(BD board)

6-1. SEMICONDUCTOR LEAD LAYOUTS

CXA1372AQ

CXD2500AQ

GP1U59XB

1 Vout
2 Vcc
3 GND
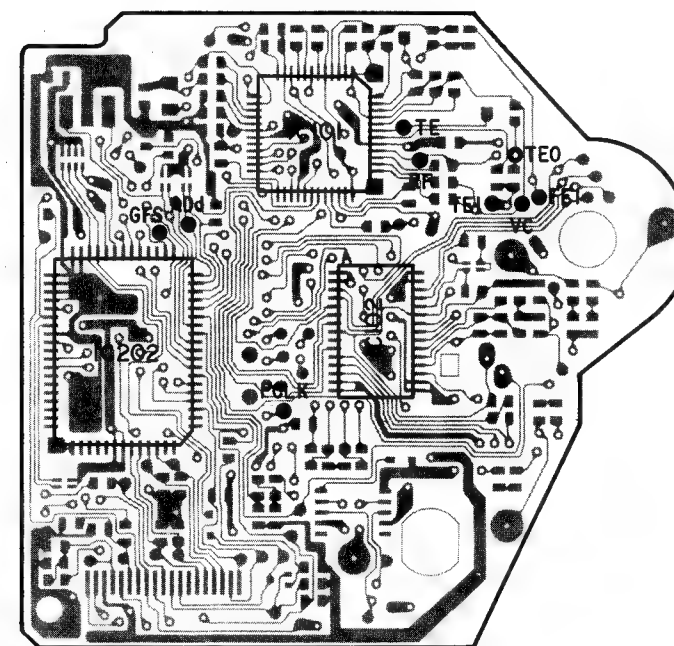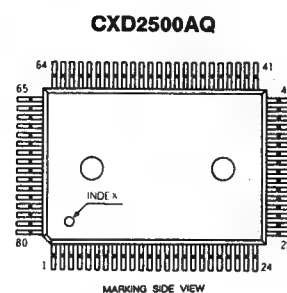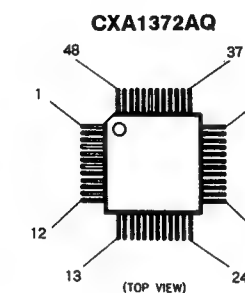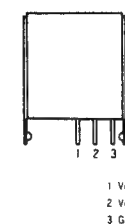
LA6525M

M5218AFP

PST572E

STK-4132MK2

TA7272P

DTA114ES
DTA144ES
DTC114ES
DTC143TS
2SB1094-LK
2SC2603-EF
2SC2724-CD
2SC3622A-LK
2SD2012

DTA124ES
DTC144ES
2SA1175-HFE

2SC3112

2SK246-GR3

DTZ3.9B
1SS352
1SS355

EC10DS2

HZS6A1L
UZL-9M2
11ES2

NJL5165K-B

SML1260S
SML1460E
SML1960A
SEL4510-D

UZ36BSB
1N4148M

6-2. CIRCUIT BOARDS LOCATION

MIC HP board — VOLUME board
DISPLAY board
POWER board
MAIN board
SW board
POWER TRANSFORMER board

MD-A board
SUB board
MD-B board
LEAF SW (A) board
LEAF SW (B) board
BD board
LOADING board

● IC Block Diagrams
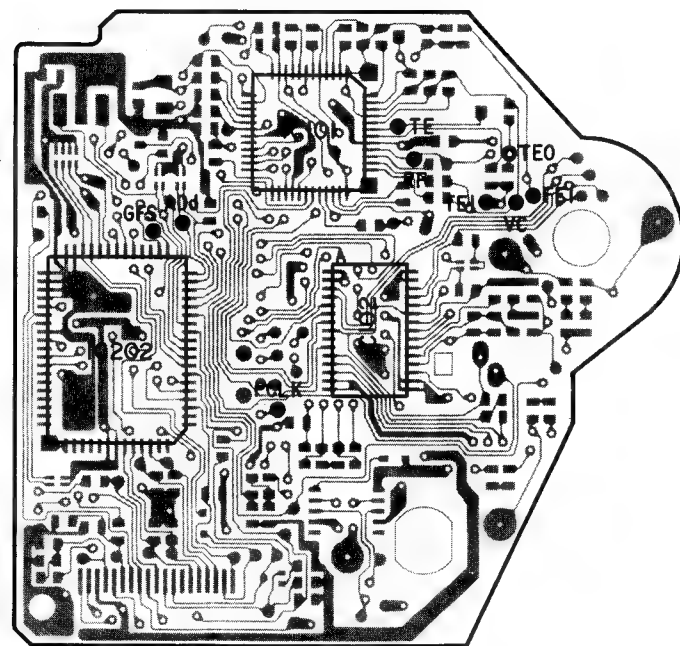
· IC801 STK-4132MK2

· IC201, 251 M5229P
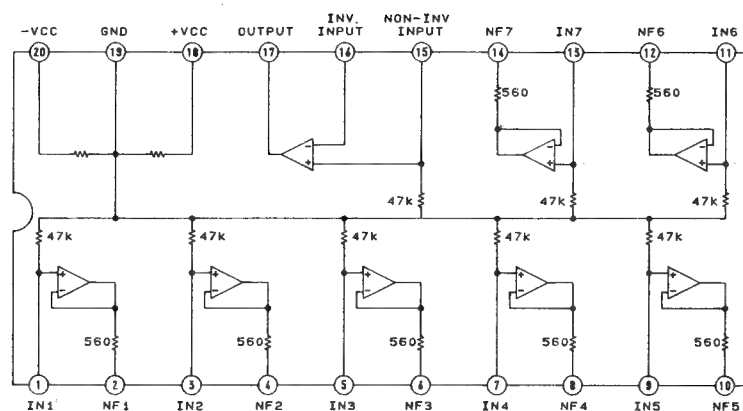
· IC231, 236 MC14066BCP

· IC406 LB1639

· IC81 LA1851N
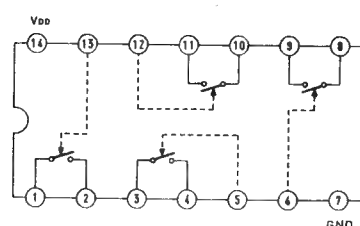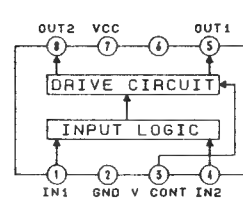
● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D21 (*2)	C-4	Q5 (*2)	B-3
D81	H-7	Q7 (*1)	D-9
D202	J-8	Q7 (*2)	D-4
D205 (*3)	F-12	Q8 (*1)	D-9
D206	F-11	Q8 (*2)	D-4
D207 (*3)	C-11	Q9 (*1)	B-8
D208	G-8	Q9 (*2)	B-3
D401	H-21	Q10 (*1)	B-9
D801	D-23	Q10 (*2)	B-4
D810	J-25	Q11 (*2)	E-4
D901	B-26	Q51 (*1)	D-2
D902	B-26	Q51 (*2)	D-7
D904	E-22	Q52 (*1)	D-2
D905	B-24	Q52 (*2)	D-7
D906	B-25	Q53 (*1)	D-6
D907	C-24	Q54 (*1)	D-6
D909	E-21	Q101	G-10
D910	C-23	Q102	F-9
D914	C-11	Q103	I-9
D915	B-22	Q201	F-16
D916	B-22	Q202	H-10
D921	F-12	Q231 (*3)	E-12
D923	B-27	Q232	E-11
D924	C-27	Q233	H-10
		Q234	J-8
IC51	F-7	Q235 (*3)	B-12
IC81	H-8	Q236 (*3)	C-12
IC201	G-17	Q237	I-9
IC231	E-13	Q251	D-17
IC232	D-12	Q252	H-10
IC234	F-17	Q301	D-14
IC236 (*3)	C-12	Q302	D-13
IC251	E-18	Q901	E-27
IC301 (*1)	C-18	Q903	E-26
IC302	D-15	Q904	E-27
IC406	H-21	Q905	E-21
IC801	E-25	Q906	E-22
IC901	C-26	Q907	E-21
IC902	E-14	Q908	C-24
IC9001	B-10	Q911	E-14
		Q999	I-7
Q1 (*1)	D-8	Q8001	D-21
Q1 (*2)	D-3	Q9001	B-11
Q4 (*1)	E-9	Q9002	B-11
Q4 (*2)	E-4	Q9003	B-10
Q5 (*1)	B-8		

(*1): H170/AEP, H700 MODEL
(*2): H170/E, EA, AUS, H170K MODEL
(*3): H170K MODEL

● EA : Saudi Arabia
AUS : Australian

[MAIN BOARD]

· IC901 M5230L-A

· IC232, 301 M5218AF

[MAIN BOARD]

ANTENNA

FM 75Ω · AM · TB1 ANTENNA

HI70: E, Saudi Arabia, Australian, HI70K MODEL

HI70,HI70K MODEL

[MAIN BOARD]

ANTENNA

FM 75Ω · AM · TB1 ANTENNA

HI70:AEP, H700 MODEL

SPEAKER IMPEDANCE USE 6~16Ω TM301

+ L − − R +

L VIDEO/AUX R J301

HI70:AEP H700 MODEL

HI70K MODEL

HI70,HI70K MODEL

HI70,H700 MODEL

HI70K MODEL

CN901

CN902

TO SUB BOARD CN408 (D)

TO SUB BOARD CN407 (E)

TO BD BOARD CN101 (H)

1-643-347

[VOLUME BOARD]

TO MIC HEADPHONE BOARD CN602 (G)

TO DISPLAY BOARD CN1001 (A)

TO DISPLAY BOARD CN1002 (B)

TO DISPLAY BOARD CN1003 (C)

901 M5230L-A

START CIRCUIT

OVERCURRENT PROTECTION CIRCUIT

OVERCURRENT PROTECTION CIRCUIT

OVERCURRENT PROTECTION CIRCUIT

OVERCURRENT PROTECTION CIRCUIT

BALANCE ADJ · OUT (−) · IN (−) · VOLTAGE ADJ · OUT (+) · IN (+) · OUT CONTROL

· IC232, 301 M5218AF

VCC · VEE

SPEAKER IMPEDANCE USE 6~16Ω
TM301

【POWER BOARD】

CN901

CN902

【VOLUME BOARD】

【POWER TRANSFORMER BOARD】

H170:E, Saudi Arabia
H170K
MODEL

VS801
VOLTAGE SELECTOR
220V~240V
110V~120V

H170:AEP
Australian
H700
MODEL

CN851
AC IN
F801

TO MIC HEADPHONE
BOARD CN602

TO DISPLAY BOARD
CN1004

TO SUB BOARD
CN407

TO BD BOARD
CN101

IC301
IC302
IC251
IC201
IC234
IC902
IC901
IC406

T101
D810
CN852
R8001
R881
R831

1-643-347
1-643-348
1-643-349
1-643-353

VIDEO/AUX
J301

CN801
CN804
CN803
CN802
CN206
CN207
CN404
CN402
CN401

[MAIN BOARD]

【VOLUME BOARD】

TO DISPLAY BOARD
CN1004

【POWER BOARD】

IC902
REG.

IC902
LA5441

IC406
MOTOR
DRIVE

IC801　POWER AMP

IC801
STK4132-2

IC901

TO BD BOARD
CN103

TO MIC HEADPHON
BOARD CN602

TO DISPLAY BOARD
CN1001

TO DISPLAY
BOARD CN1002

TO DISPLAY
BOARD CN1003

Q911
CD
SWITCH

Q203,Q233
MUTE INV.
BUFFER

Q202
Q252
MUTE

Q9001,Q9002
POWER IN
DETECT

Q8001
MUTING

Q906
REG

Q903,904
Q905,907
REG
B+,B−
REG
+12V

VOLUME
MIN　MAX

【 BOARD 】

CN401
+7.5V 14
H.P.MUTE 15
-7.5V 16
MIX.MIC.IN 17
PRE.L 18
A.GND 19
PRE.R 20
A.GND 21
NC 22
NC 23
AC5V 24
VOL.GND 25
AC3V 26
+52V (US) 27
+5.6V (US) 28
POWER.ON/OFF 29
NC
GND 30
VOL.R 31
GND 32
VOL.L 33

CN404

IC406
MOTOR
DRIVE

RV406 (4/4)
RV406 (1/4)

【 TRANSFORMER BOARD 】

T101
POWER
TRANSFORMER

F801
T1A 250V

CN851
AC IN

34 +25V
35 GND
36 -25V
37 AC.9V
38 AC.9V
39 AC.24V
40 AC.3V
41 AC.3V

CN852

VOLTAGE SELECTOR
110V - 120V
240V - 240V

120V
240V
VS801

NC
AC.3V
VOL.GND
AC.3V
+32V
+5.6V (US)
POWER.ON/OFF
NC
GND
VOL.R
GND
VOL.L

23 24 25 26 27 28 29 30 31 32 33

【 POWER BOARD 】

IC801 POWER AMP

IC801
STK4132-2

IC901 REG (±12V)

Q906 REG
Q903,904 B+,B- REG
Q901 2SC2603

Q905,907 REG

IC901 M5230L

+7.5V
Q907 2SD2012

Q904 2SD2012

+32V
Q908 2SD2012

R921 10k
R903

-7.5V

Q909 2SB1375

34 +25V
35 GND
36 -25V
37 AC.9V
38 AC.9V
39 AC.24V
40 AC.3V
41 AC.3V

CN801

2
4
5

-44-   -45-

[SW BOARD]

[SUB BOARD]

S1525	CD SYNC
S1524	START ▷◻
S1524	HIGH SPEED
S1518	◼ A
S1516	AMS ◀◀ A
S1520	◁ A
S1519	▷ A
S1517	AMS ▶▶ A
S1511	◼ B
S1521	AMS ◀◀ B
S1514	◁ B
S1513	▷ B
S1522	AMS ▶▶ B
S1501	△ OPEN/CLOSE CD

S1524	PAUSE ◻◻ B
S1523	REC B
S1502	▷◻◻ CD
S1503	◻ CD
S1504	▶▶ ▷▷◻ CD
S1505	◻◁◁ ◀◀ CD
S1506	REPEAT CD
S1507	PROGRAM CD
S1508	SHUFFLE CD / PLAY MODE
S1022	CONTINUE CD
S1509	EDIT / TIME FADE CD
S1510	CHECK CD

IC201
SIGNAL
SELECTOR

16

5	6	7	8	9	10	11	12	13	14	15	16

【SUB BOARD】

SIGNAL OR LED DRIVER **IC404**

Q401, Q402 CAPSTAN MOTOR B+ SWITCH

IC401 M50964-251FP DECK CONTROLLER

IC402 REEL MOTOR DRIVER

IC405 RESET

IC403 AMS AMP

IC205 TAPE MODE CONTROL

IC202

IC203

IC201 SIGNAL SELECTOR

IC204

CN501

CN410

CN402

CN403

CN404

CN405

CN406

CN407

CN408

-47-   -48-

16

【MD-A BOARD】

IC31
PB EQ AMP

【LEAF SW (A) BOARD】 (A DECK) TCM-190 RA13A

IC81
ROTATION DET

【MD-B BOARD】

PB EQ AMP

IC31

【LEAF SW (B) BOARD】 (B DECK) RB22A

IC81
ROTATION DET

【MD-B BOARD】

【MD-A BOARD】

【SUB BOARD】

HRP101 / HE101
RECORD/PLAY BACK / ERASE
HEAD

M101B
REEL MOTOR

M101A
REEL MOTOR

M102B
CAPSTAN MOTOR

HP101
PLAY BACK
HEAD

M102A
CAPSTAN MOTOR

【LEAF SW(B) BOARD】

【LEAF SW(A) BOARD】

TO MAIN BOARD
CN205

[SW BOARD]

1-643-351 12

TO MAIN BOARD CN205
TO MAIN BOARD CN106

—53—

1-643-350 12

—54—

● Semiconductor Location

Ref. No.	Location
D31	C-2
D401	E-19
D403	D-16
D404	F-19
D405	C-16
D407	I-17
D410	G-17
D411	B-18
D414	D-19
D416	D-17
D1501	D-22
D1502	E-22
D1503	B-22
D1504	A-22
D1506	K-22
D1507	H-22
D1508	I-22
D1509	J-22
D4001	B-16
IC31A	D-9
IC31B	D-3
IC81A	I-11
IC81B	I-5
IC201	I-18
IC202	G-16
IC203	I-16
IC204	I-16
IC205	G-17
IC401	D-18
IC402	C-20
IC403	I-18
IC404	B-19
IC405	E-18
Q51	B-3
Q52	B-3
Q53	C-3
Q71A	C-11
Q71B	C-5
Q201	G-19
Q202	I-15
Q301	G-18
Q302	I-15
Q401	D-19
Q402	E-19
Q403	E-18
Q404	F-20
Q405	C-17
Q406	D-16
Q407	D-17
Q408	D-17
Q409	F-19
Q410	F-20
Q411	I-20
Q412	G-18
Q414	D-17
Q415	E-17

● IC Block Diagrams

· IC202 CXA1101M

· IC201 CD4053BCM

· IC402 TA7272P

• IC Block Diagrams

・IC601 M50197FP
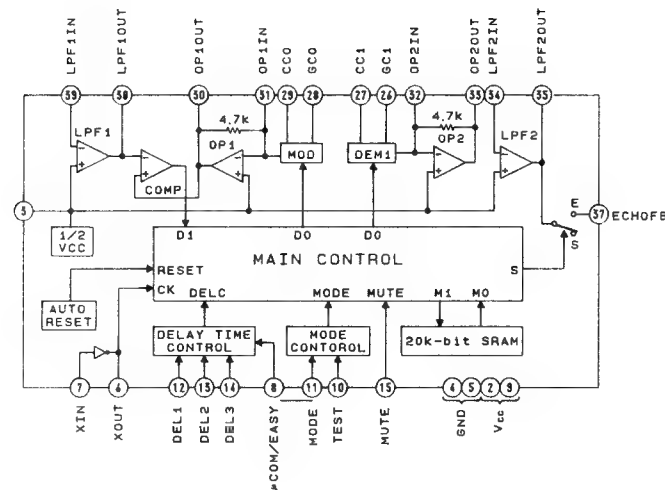
・IC1004 CD4052BCM
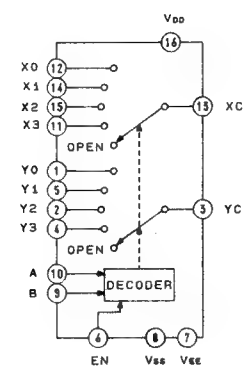
• Semiconductor Location

Ref. No.	Location
D101	D-4
D201	D-3
D601 (*1)	D-7
D602 (*1)	E-8
D1001	F-21
D1002	D-21
D1004	F-13
D1005	F-21
D1007	C-20
D1030	D-19
D1031	D-18
D1051	F-20
D1052	E-19
D1053	E-19
D1054	E-19
D1055	D-18
D1057 (*1)	E-16
D1058	D-21
D1059	C-21
IC101	B-4
IC102	C-4
IC103	D-4
IC106	F-14
IC201	H-4
IC202	C-3
IC203	H-3
IC301	G-3
IC302	G-2
IC501	C-16
IC601 (*1)	E-8
IC602	D-10
IC1001	G-15
IC1002	G-21
IC1003	C-19
IC1004	D-20
IC1005	F-13
IC1006	G-18
IC1007	G-19
IC1008	D-21
Q101	B-3
Q201	E-4
Q601	D-16
Q602	F-9
Q603 (*1)	F-9
Q1001	D-21
Q1002	D-20
Q1003	D-20
Q1004	D-21
Q1051	E-13

(*1): H170K MODEL

6-7. PRINTED WIRING BOARDS — DISPLAY SECTION — • See page 34, 35 for Semiconductor Lead Layouts and Circuit Boards Location.

[BD BOARD] (CONDUCTOR SIDE)

[BD BOARD] (COMPONENT SIDE)

[MIC HEADPHONE BOARD]

[LOADING BOARD]

7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

[MIC HEADPHONE BOARD]

[DISPLAY BOARD]

CN601

J601
HEADPHONES

J603
MIC 2

J602
MIC 1

HI70K MODEL

TO VOLUME BOARD
CN402

S1013
KARAOKE PO

S1014
PRESET

HI70,HI70K MODEL

HI70K MODEL

TO MAIN BOARD
CN203

TO MAIN BOARD
CN202

RV501
MIC LEVEL

CN1004

(POPS/CLASSIC)

HI70K MODEL

IC1001

IC1008

IC1007

1-643-353

HI70K MODEL

1-643-554

S1018
STEREO/MONO

TO MAIN BOAR
CN201

S1017
MEMORY/NEXT

[LOADING BOARD]

S291
LOAD OUT

S291
LOAD IN

M291
LOADING MOTOR

CN101

1-636-300

OPTICAL
PICK-UP BLOCK
(KSS-240A)

—57—

—58—

【DISPLAY BOARD】

【MIC HEADPHON BOARD】

【SUB COMBINED BOARD】

IC601

IC602 HEADPHONES AMP

IC1002 ROM

1 2 3 4 5 6 7 8 9 10 11

A

B

OPTICAL PICK-UP BLOCK (KSS-240A)

【BD BOARD】

DETECTOR
RF AMP

LD
DRIVER

FOCUS COIL
TRACKING COIL

B-KSS-240A

IC202
IC202
μPD75116GF
SYSTEM CONTROL

R222 18k

R223 22k
R224 22k
R225 22k
R226 22k

C210 0.1
R209 22k
X202 4.0M

C209 1#

R210 18k

CN102

C

D

E

F

G

IC102
PWM MOTOR
DRIVER

IC101
IC101
CXA1372Q
EFM COMPARATOR
FOCUS/TRACKING/SLED
SERVO

IC201
IC201
CXD2500AQ
CD DIGITAL
SIGNAL PROCESSOR
CLV SERVO

Q101
BTC144EF

C111
C109
R110

SW101
LIMIT
5W
R160

SLED
MOTOR
C173 0.1
R174 10
R159 18k
R173 10

SPINDLE
MOTOR
C171 0.1
R171 10
R172 10
C172 0.1

IC102
LA6525M

C151
C152 6800p
R155 68k
R153 33k
R154 33k

C153
R157 18k
C154 2200p

C112
C115 2200p
C117 0.1
R112 27k
FED2

FOCUS
GAIN

TRACKING
GAIN

C118 0.1
C119 2200p
R114 220k
R113
R102 10k

C101 0.1
C102 0.033
R101 100k
C104 0.1
R103 56k

C105 47 4
R104 120k

C106 47 4

R105 100k
C108 0.1
R109 3.3k
R108 220k
R107 510k

C206 1#

H

I

J

K

L

BD2

16

IC103 MOTOR DRIVER
IC103 M54641FP

IC203 CX82554M DIGITAL FILTER

IC301 PCM67U D/A CONVERTER

IC302 AUDIO AMP

TO MAIN BOARD CN207

● Wave forms

❶ 5.3Vp-p
120nsec
IC1001 ㊶

❷ 5.2Vp-p
31μsec
IC1001 ㊹

❸ 5.2Vp-p
0.26μsec
IC401 ㉗

❹ 3Vp-p
140nsec
IC51 ㉔

❺ 5Vp-p
4MHz
IC202 ⑧

❻ 3.3Vp-p
16MHz
IC203 ③

❼ 1.2Vp-p
IC101 ㊵ play (RFO)

Note on Schematic Diagram :

● All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
● All resistors are in Ω and ¼ W or less unless otherwise specified.
● △ : internal component.
● ⊣ᴡᴡ⊢ : fusible resistor.

Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

● ━━━ : B + Line.
● ━ ━ ━ : B − Line.
● ☐ : adjustment for repair.
● Voltage and waveforms are dc with respect to ground under no-signal conditions.
no mark : PB

● Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
● Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
● Circled numbers refer to waveforms.
● Signal path.

➡ : FM	▷ : PB	➭ : CD
	▷ : REC	➭ : CD AF
	➭ : AF	
	➭ : MIC	

Note on Mounting Diagram :

● ○━ : Parts extracted from the component side.
● ● : Through hole.
● ▨ : Pattern on the side which is seen.
● ▨ : Pattern of the rear side.

IC Block Diagrams

IC201 CXD2500AQ
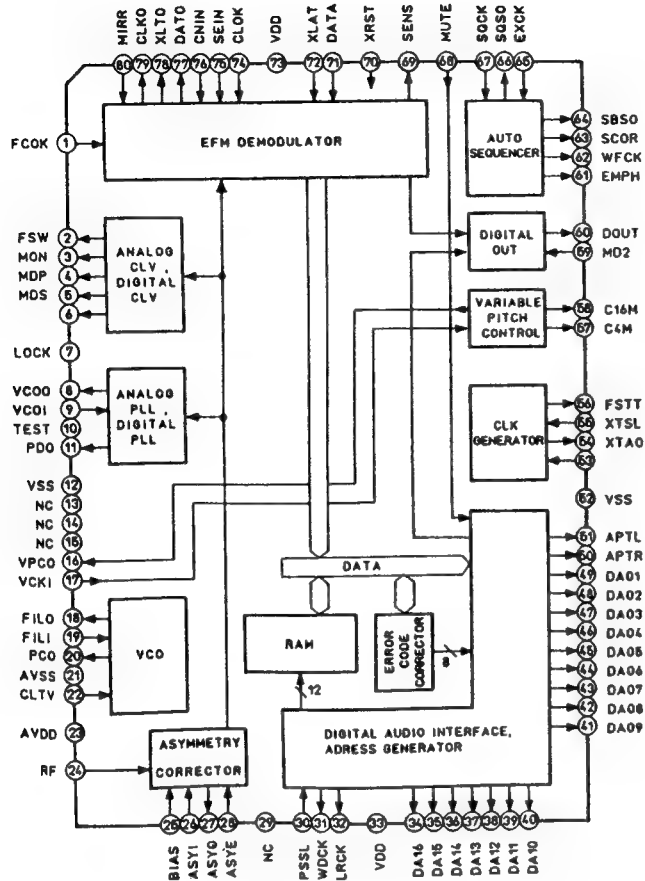
IC102 LA6525M
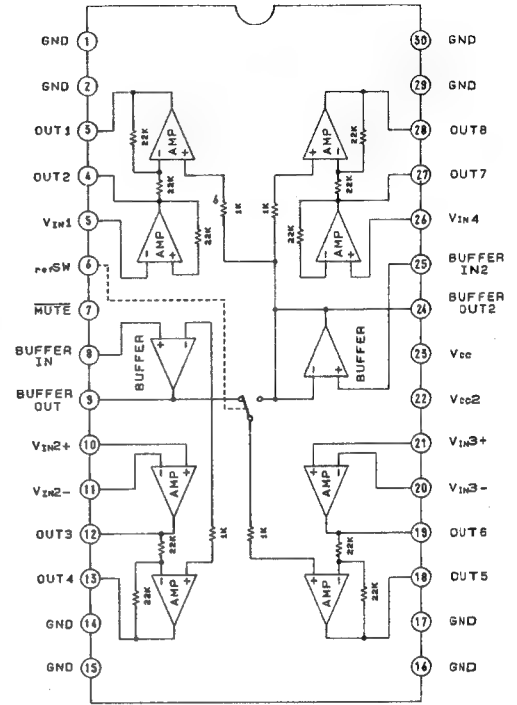
IC203 CXD2554M

· IC101 CXA1372AQ

DVcc CC1 CC2 FDK EFM ASY DFCT MIRR DGND SENS COUT XRST

(34) (35) (34) (33) (32) (31) (29) (28) (27) (26) (25)

FDK COMPARATOR | EFM COMPARATOR | AUTO ASY BUFFER

(37) CB

TTL→I²L

(24) DATA

(38) CP
(39) RFI
(40) RFO

FDK AMP | LEVEL BOTTOM HOLD | AUTO ASY CONTROL AMP

TTL I²L

(23) XLT
(22) CLK
(21) LOCK
(20) DIRC

DFCT AMP | DFCT BOTTOM HOLD | DFCT COMPARATOR | MIRR COMPARATOR | TTL↓I²L

MIRR AMP | PEAK BOTTOM | MIRR DIFERENTIAL AMP | MIRR HOLD AMP

(41) DVee

SEQUENCER

(19) AVee

(42) TZC | COMPARATOR

FS1-4   TW1-7   PS1-3
TG1.2

COMPARATOR (18) SSTOP

(43) TE — DFCT
(44) TDFCT

TG1 T.GAIN UP/DOWN | FOCUS PHASE COMPENSATION

I SET (17) ISET
F SET (16) FSET

(45) ATSC — BPF — WINDOW COMPARATOR

TW1 T.SERVO ON/OFF

(46) FZC — COMPARATOR

FS1 F.SEARCH UP/DOWN

TW7 T.BRAKE SERVO ON/CHOP | TW5 TW6

(15) SL−

(47) FE — DFCT
(48) FDFCT

FS3 F.GAIN DOWN/NORMAL | FOCUS PHASE COMPENSATION

TW3 TW4

SLEO AMP (14) SLO

FS4 FOCUS ON/OFF | DFCT

FS2 F.SEARCH ON/OFF | FOCUS AMP

TG2 T.GLIN UP/DOWN | TRACKING AMP

TW2 SLED ON/OFF (13) SL+

(1) (2) (3) (4) (5) (4) (7) (8) (9) (10) (11) (12)

VC   FBO FS3 FLB   FEO FE− SRCH TGV TGI AVcc TAO TA−

· IC103 M54641FP

Vcc (1)   Vcc (8)

REG

(6) REFERENCE

IN 1 (3) — INPUT AMP | CONTROL | POWER AMP (2) OUT 2

IN 2 (6) — INPUT AMP | POWER AMP (7) OUT 1

(4)
GND

—66—

6-10. IC PIN DESCRIPTION

● IC401 Deck Controller (M50946-251FP)

Pin No.	Pin Name	I/O	Symbol	Description
1	P62		G	GND
2	P61		G	GND
3	P60		G	GND
4	P47		G	GND
5	P46		G	GND
6	AN5	I	B HALF	Deck B record prevention claw A, B detection input (Analog)
7	AN4	I	KEY Y	KEY input
8	AN3	I	KEY X	
9	AN2	I	AMS IN	AMS signal input
10	P41	O	L̄ MUTE	Line mute output
11	P40	O	R̄ MUTE	mute output
12	P37	O	RELAY (B MD)	REC/PB change relay output
13	P36	O	R/P	Dolby IC REC/PB select output
14	P35	O	EQ70	Playback EQ output for playing deck
15	P34	O	SEL A/B̄	Dolby IC PB input Deck A/B select output
16	P33	O	AMS A/B̄	AMS AMP input Deck A/B select output
17	P32	I	AU BUS	AUDIO BUS input
18	P31	O	BIAS	Bias oscillation output
19	P30	O	AUB OUT	AUDIO BUS output
20	INT1	I	A UBUS	AUDIO BUS normal input
21	NC	—	——	——
22	NC	—	——	——
23	NC	—	——	——
24	CNVSS		CNVSS	GND
25	RESET	I	RESET	Microcomputer reset input
26	XIN	I	XIN	Clock input (4MHz)
27	X₀	O	X₀	Clock output (4MHz)
28	Φ	O	Φ	Not used (open)
29, 65	Vss		Vss	GND
30	P57	I	PW IN	POWER OFF detection input
31	P56	I	A STOP	Deck A STOP switch input
32	P55	I	A HALF	Deck A Half switch input
33	P54	I	A SHUT	Deck A Reel table signal input
34	P53	I	A70 U	Deck A TYPE II switch input
35	P52	I	B STOP	Deck B STOP switch input
36	P51	I	B SHUT	Deck B Reel table signal input
37	P50	I	B70 U	Deck B TYPE II switch input
38	NC	—	——	——
39	P17	O	ARM 3	Deck A Reel Motor control out
40	P16	O	ARM 2	Deck A Reel Motor control out

Detail for Pin 6 (AN5 / B HALF):

Volgate (V)	1V	1.9V	2.8V	3.9V	5V
Harf	ON	ON	ON	ON	OFF
E. PROOF A	OFF	ON	OFF	ON	OFF
E. PROOF B	ON	ON	OFF	OFF	OFF

Detail for Pins 7, 8 (AN4 / KEY Y, AN3 / KEY X):

Volgate (V)	0	0.3	0.7	1.2	1.7	2.3	2.8	3.4	4.0	4.5	5.0
KEY Y	B■	B❚❚	B▶	B◀		A◀◀	A▶▶			RELAY	OFF
KEY X	A■	A▶	A◀	A◀	B◀◀	B●		B CD			

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Pin No.	Pin Name	I/O	Symbol	Description
41	P15	O	ARM 1	Deck A Reel Motor control out
42	P14	O	BRM 3	Deck B Reel Motor control out
43	P13	O	BRM 2	Deck B Reel Motor control out
44	P12	O	BRM 1	Deck B Reel Motor control out
45	P11	O	H/L	Capstan motor speed select
46	P10	O	A CM	A Capstan motor ON/OFF
47	P07	O	B CM	B Capstan motor ON/OFF
48	P06	I	BS/ASCH	Deck A Reel table/BS signal input
49	P05	I	A・P/BSCH	Deck B Reel table/A・P signal input
50	P04	O	A ◁	Deck A RVS LED output
51	P03	O	A ▷	Deck A FWD LED output
52	P02	O	A PLAY	Deck B RVS/FWD LED control output
53	P01	O	DUB H	High Speed Dubbing LED output
54	P00	O	DUB N	Normal Speed Dubbing LED output
55	NC	—	——	——
56	P27	O	CD SYNC	Auto CD Synchro LED output
57	P26	O	B ◁	Deck B RVS LED output
58	P25	O	B ▷	Deck B FWD LED output
59	O24	O	B PLAY	Deck B RVS/FWD LED control output
60	P23	O	B PAUSE	Deck B PAUSE LED output
61	P22	O	B ●	Auto CD Synchro LED output
62	P21	O	PASS	PASS amplifier switch output
63	P20	I	TEST	Electrical adjustment test mode setting
64	NC	—	——	——
66	NC	—	——	——
67	Vcc		Vcc	POWER 5 ± 0.5V
68	AVss		AVss	Analog system GND
69	VREF	I	VREF	Analog system reference voltage input
70	D・A		D・A	GND
71	PWM		——	GND
72	P63		——	GND

[TEST MODE]

When making pin ⑬ low (connect TP1 to ground with jumper wire), following function operates.

1. Sourec monitor
    Release the line mute while recording.

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● IC202 CD Controller (μPD75116GF)

Pin No.	Pin Name	I/O	Description
1	Not Used	O	OPEN
2	Not Used	O	OPEN
3	DPCLK	O	Display data transmission clock output
4	LATCH	O	Serial data latch pulse output for digital filter CXD2554M
5	SHIPT	O	Serial clock output for digital filter CXD2554M
6	AFT	O	Serial clock output for digital filter CXD2554M
7	RESET	I	System reset input terminal (LOW ACTIVE)
8	X2	I	System clock input 4.0MHZ
9	X1	I	System clock input 4.0MHz
10	DFCTSW	O	For focus in till spindle kick is ON except then is OFF.
11	AMUTE	O	Muting ON/OFF output
12	BSOUT	O	Audio bus output
13	AFADJ	I	Teast mode input, and on time POWER "L" is test move ment of every kind
14	LDON	O	Laser diode ON/OFF output
15	XKT	O	Serial data latch pulse output for CXD2500AQ
16	CLK	O	Serial data output for CXD2500AQ
17	DATA	O	Serial data output for CXD2500AQ
18	Not Used	I	GND
19	ADJ	I	Test mode input, "L" is GFS no check.
20	GFS	I	GFS OK/NO Good input
21	FOK	I	Focus OK/NO Good input
22	Not Used	O	OPEN
23	Not Used	O	OPEN
24	LODOUT	O	Disc tray loading-out output
25	LODIN	O	Disc tray loading-out output
26	VSS	I	GND
27	INSW	I	Disk tray clamp-end input
28	OUTSW	I	Disk tray open-end input
29	(TIMER)	I	Timer start input
30	BSIN	I	Audio bus input
31	Not Used	I	GND
32	Not Used	I	GND
33	Not Used	I	GND
34	Not Used	I	GND
35	Not Used	I	GND
36	Not Used	I	GND
37	SENS	I	SENS input, and the state input of every kind from CXD2500Q
38	TIMER	I	(NOT-PLAY)
39	D/F 16BT	I	(NOT-PLAY)
40	Not Used	I	GND
41	SUBQ	I	Q data serial input from CXD2500AQ
42	Not Used	O	OPEN
43	SQCLK	O	Sub-code Q data read-in clock output for CXD2500AQ
44	SCOR	I	Sub-code synchro S0 and S1 detect input
45	Not Used	O	OPEN
46		O	
47	Not Used	O	OPEN
48	Not Used	O	OPEN
49	Not Used	I	OPEN
50	Not Used	I	OPEN

Pin No.	Pin Name	I/O	Description
51	Not Used	I	OPEN
52	Not Used	I	OPEN
53	Not Used	O	OPEN
54	Not Used	O	OPEN
55	Not Used	O	OPEN
56	Not Used	O	OPEN
57	Not Used	I	+ 5V
58	VDD	I	+ 5V
59	DPDAT3	O	OPEN
60	DPDAT2	O	OPEN
61	DPDAT1	O	OPEN
62	DPDAT0	O	OPEN

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

· EA : Saudi Arabia

AUS : Australian

7-1. CASE, POWER SECTION
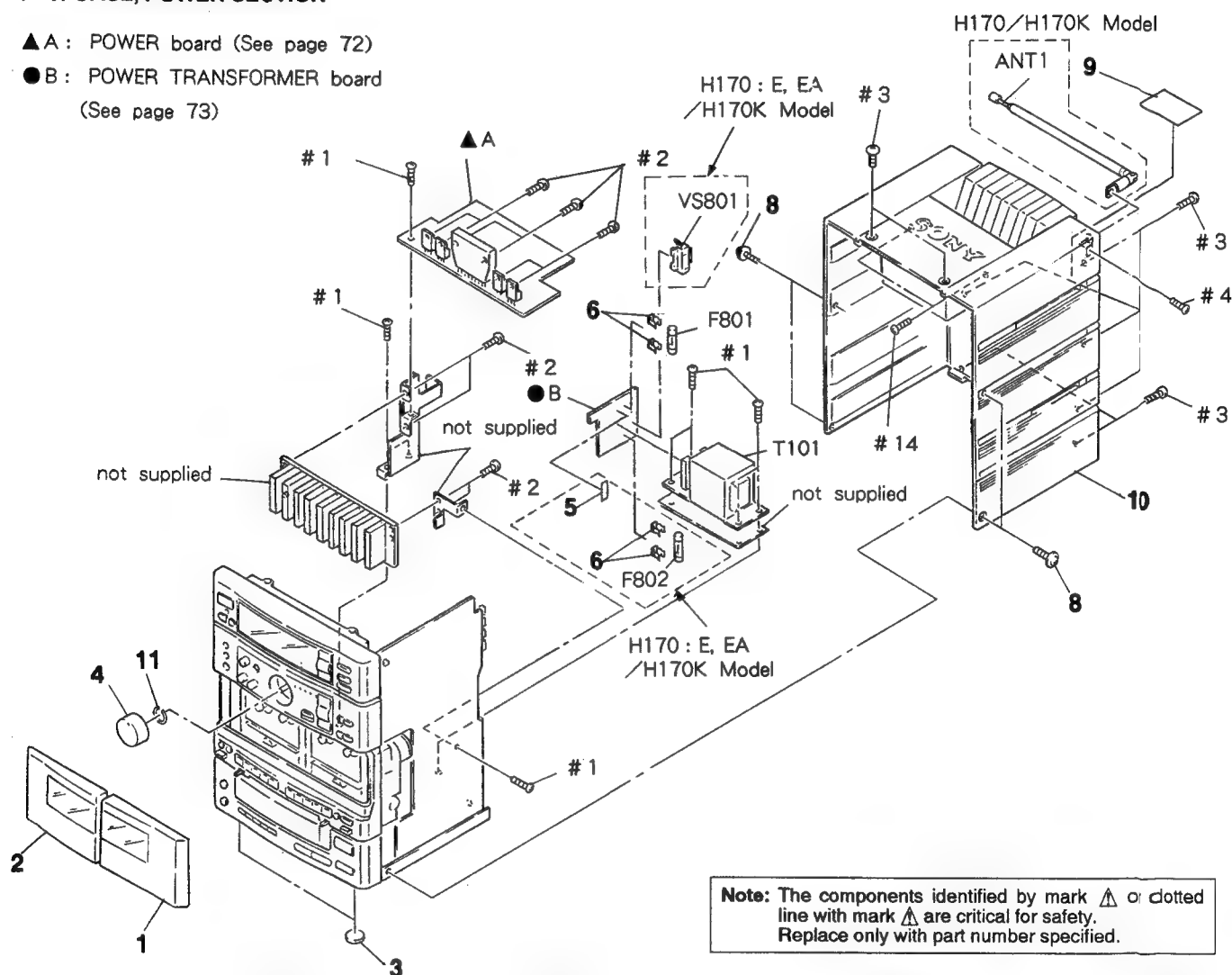
▲A : POWER board (See page 72)
●B : POWER TRANSFORMER board
(See page 73)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
1	X-4942-644-1	LID (B) ASSY, CASSETTE	
2	X-4942-643-1	LID (A) ASSY, CASSETTE	
3	3-319-288-01	FOOT	
4	X-4942-657-1	KNOB (VOLUME) ASSY	
5	3-701-947-14	LABEL (T2A), FUSE (H170:E, EA, H170K)	
6	1-533-213-31	HOLDER, FUSE	
8	3-704-366-01	SCREW (CASE) (M3X8)	
*9	4-941-548-01	LABEL, CLASS 1 (H700:UK)	
10	4-951-989-01	CASE (H700)	
10	X-4942-649-1	CASE ASSY (H170:AEP, AUS)	

Ref. No.	Part No.	Description	Remarks
10	X-4942-650-1	CASE ASSY (H170:E, EA, H170K)	
11	3-356-957-01	SPRING	
⚠VS801	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE	
ANT1	1-501-321-61	ANTENNA, TELESCOPIC (H170, H170K)	
⚠F801	1-532-078-00	FUSE	
⚠F801	1-532-203-00	FUSE (H170:E, EA, H170K)	
⚠F802	1-532-078-00	FUSE (H170, H170K:E, EA)	
⚠T101	1-450-769-11	TRANSFORMER, POWER (H170:AEP, H700)	
⚠T101	1-450-770-11	TRANSFORMER, POWER (H170:E, EA, AUS, H170K)	

7-2. FRONT PANEL, MAIN BOARD SECTION

● C : VOLUME board (See page 73)
● D : MIC HP board (See page 73)
● E : SW board (See page 73)
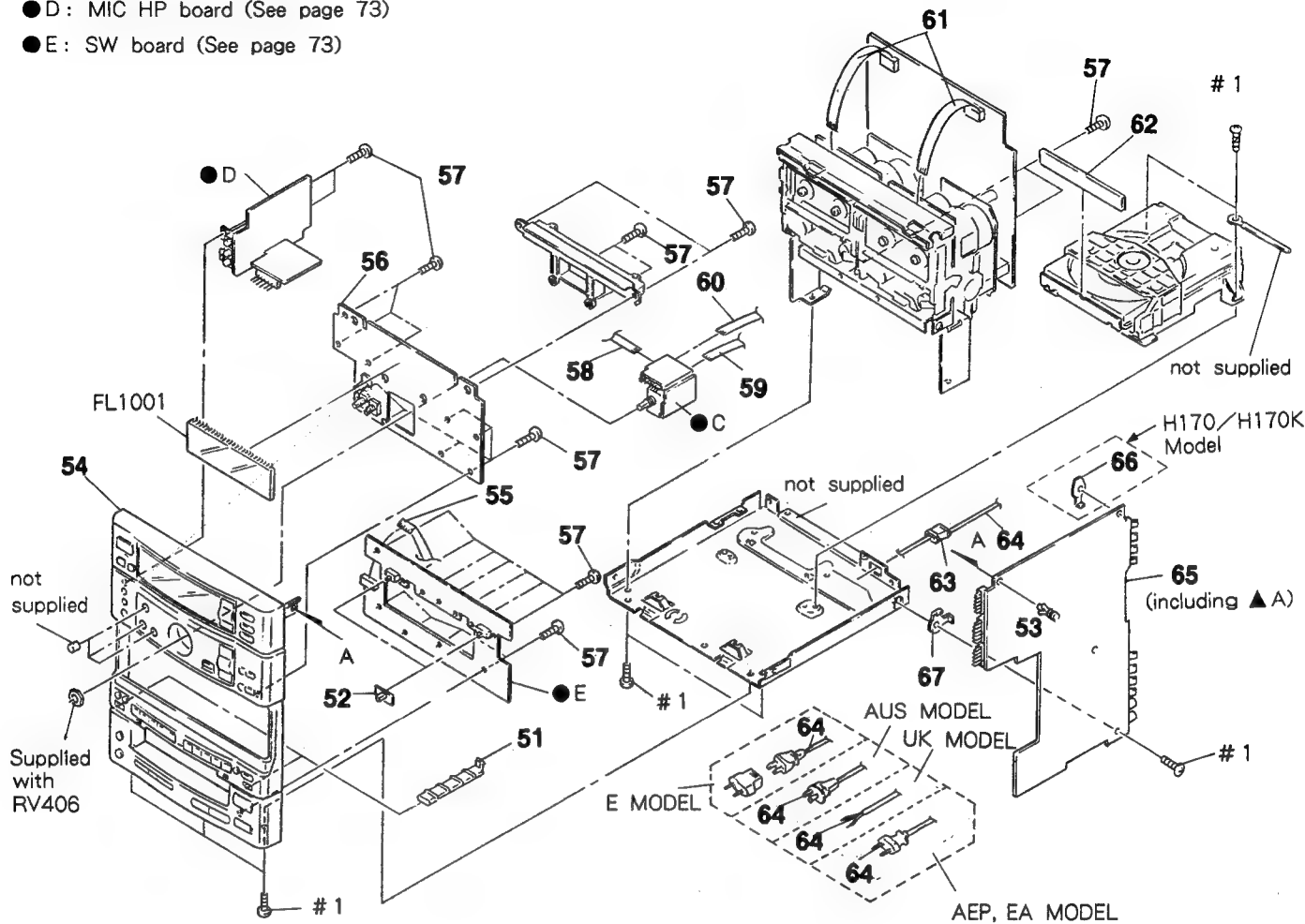
Ref. No.	Part No.	Description	Remarks
51	4-951-982-01	BUTTON (TC-E)	
52	4-951-985-01	KNOB (SLIDE)	
53	4-812-134-00	RIVET NYLON, 3.5	
54	X-4942-645-1	PANEL ASSY, FRONT (H170K)	
54	X-4942-646-1	PANEL ASSY, FRONT (H170:E, EA, AUS)	
54	X-4942-647-1	PANEL ASSY, FRONT (H170:AEP)	
54	X-4942-648-1	PANEL ASSY, FRONT (H700)	
55	1-696-146-11	WIRE (FLAT TYPE) (16 CORE)	
* 56	A-4347-469-A	DISPLAY BOARD, COMPLETE (H170:E, EA)	
* 56	A-4347-475-A	DISPLAY BOARD, COMPLETE (H170:AEP, H700)	
* 56	A-4347-483-A	DISPLAY BOARD, COMPLETE (H170K)	
* 56	A-4347-544-A	DISPLAY BOARD, COMPLETE (H170:AUS)	
57	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
58	1-690-996-11	WIRE (FLAT TYPE) (4 CORE)	
* 59	1-590-240-11	WIRE, FLAT TYPE (9 CORE)	
60	1-690-997-11	CABLE, FLAT (11 CORE)	
61	1-690-588-31	WIRE, FLAT TYPE (9 CORE)	

Ref. No.	Part No.	Description	Remarks
62	4-951-984-01	PANEL (LOADING)	
* 63	3-703-244-00	BUSHING (2104), CORD (H170:AEP, H700)	
* 63	3-703-571-11	BUSHING (S) (4516), CORD (H170:E, EA, AUS, H170K)	
▲64	1-574-804-11	CORD, POWER (H700:UK)	
▲64	1-574-805-11	CORD, POWER (H170:AEP, EA/H170K:EA/H700:AEP)	
▲64	1-574-902-11	CORD, POWER (H170:E/H170K:E)	
▲64	1-690-056-11	CORD, POWER (H170:AUS)	
* 65	A-4343-548-A	MAIN BOARD, COMPLETE (H170:E, EA)	
* 65	A-4343-553-A	MAIN BOARD, COMPLETE (H170K)	
* 65	A-4343-554-A	MAIN BOARD, COMPLETE (H170:AEP)	
* 65	A-4343-558-A	MAIN BOARD, COMPLETE (H700)	
* 65	A-4343-575-A	MAIN BOARD, COMPLETE (H170:AUS)	
66	4-925-530-01	PLATE, GROUND (H170, H170K)	
67	4-942-204-01	PLATE, GROUND	
FL1001	1-519-718-11	INDICATOR TUBE, FLUORESCENT	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.
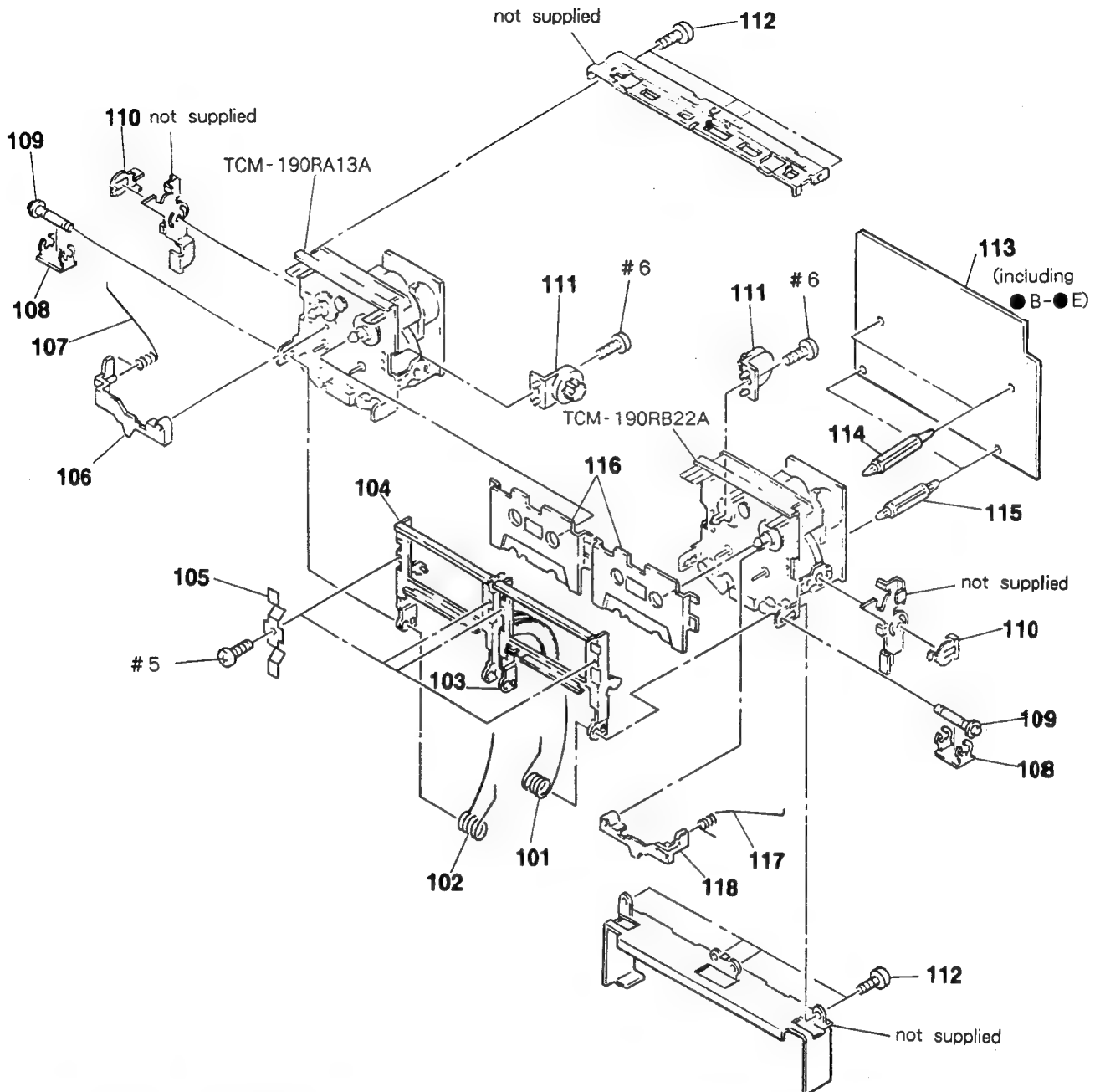
Ref. No.	Part No.	Description	Remarks
101	3-354-960-01	SPRING (LOADING R), TORSION	
102	3-354-959-01	SPRING (LOADING L), TORSION	
103	X-3362-856-1	HOLDER (R) ASSY, CASSETTE	
104	X-3362-857-1	HOLDER (L) ASSY, CASSETTE	
105	3-340-137-01	SPRING, CASSETTE RETAINER	
106	3-354-955-01	LEVER (EJ SAFTY LEVER L)	
107	3-354-961-01	SPRING (EJ SAFTY SPRING L)	
108	3-367-720-01	RING (W), RETAINING	
109	3-367-721-01	SHAFT (FULCRUM SHAFT)	
110	3-354-957-01	JOINT (LOCK LEVER)	

Ref. No.	Part No.	Description	Remarks
111	3-354-963-01	DAMPER	
112	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
* 113	A-4343-549-A	SUB BOARD, COMPLETE (H170:E, EA)	
* 113	A-4343-550-A	SUB BOARD, COMPLETE (H170:AEP, H700)	
* 113	A-4343-552-A	SUB BOARD, COMPLETE (H170K)	
* 113	A-4343-573-A	SUB BOARD, COMPLETE (H170:AUS)	
* 114	3-682-419-31	HOLDER, P.C.B	
* 115	3-682-419-21	HOLDER, P.C.B	
116	3-367-711-01	RETAINER, CASSETTE	
117	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
118	3-354-956-01	LEVER (EJ SAFTY LEVER R)	

7-4. MECHANISM DECK SECTION (1)

(DECK A : TCM-190RA13A)
(DECK B : TCM-190RB22A)

M102A (DECK A)
M102B (DECK B)

not spullied

M101A (DECK A)
M101B (DECK B)

IC81A
IC81B

HP101 (DECK A)
HRP101 (DECK B)
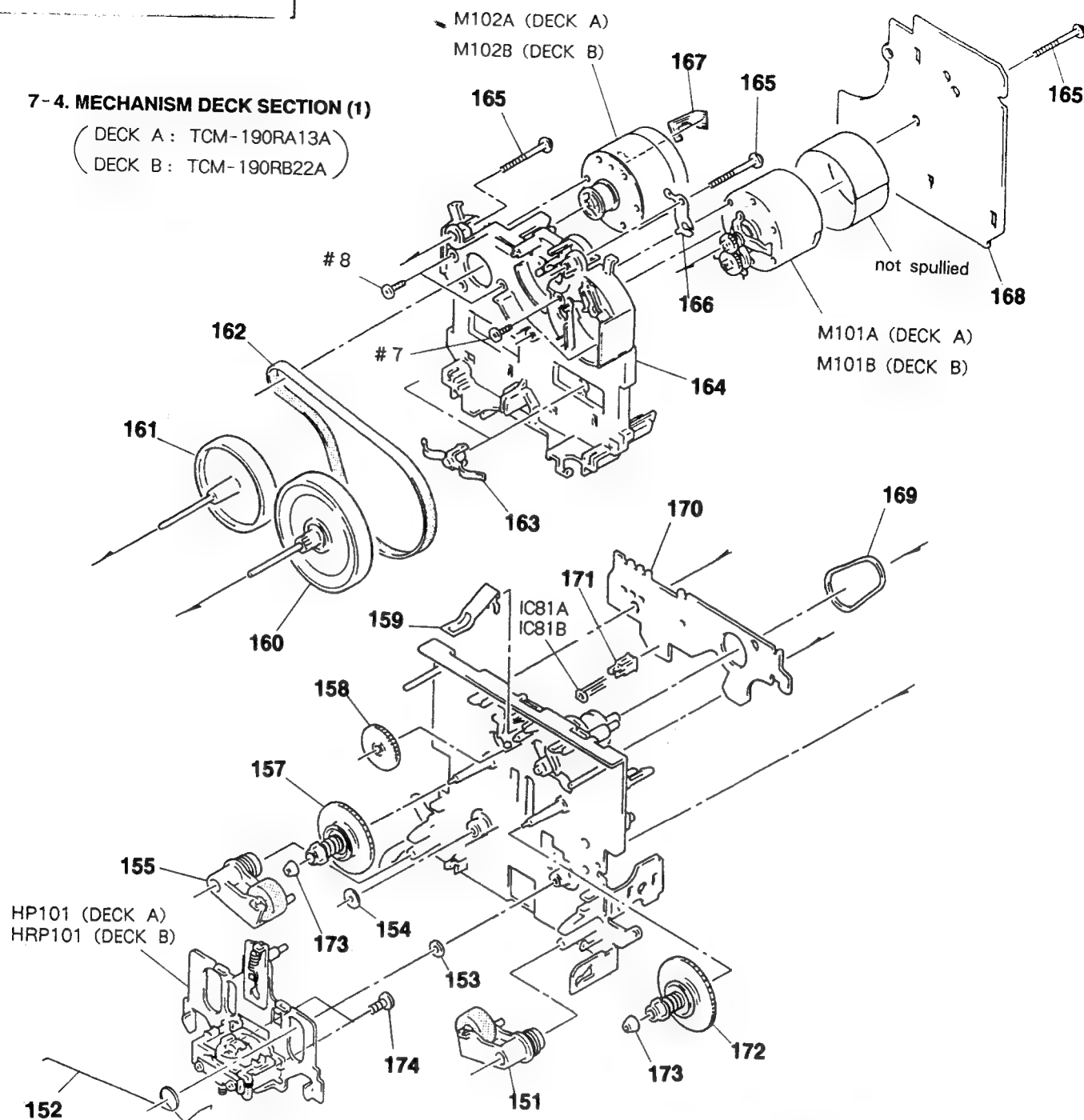
Ref. No.	Part No.	Description	Remarks
151	X-3359-408-1	LEVER (PINCH LEVER FWD) ASSY	
152	3-359-455-01	SPRING, TORSION	
153	3-356-713-01	WASHER	
154	3-356-714-01	WASHER	
155	X-3359-409-1	LEVER (PINCH LEVER REV) ASSY	
157	X-3362-078-1	TABLE ASSY (B), REEL	
158	3-359-424-01	GEAR (REV GEAR)	
159	3-359-430-01	SPRING(CASSETTE RETAINER), LEAF	
160	X-3364-554-1	FLYWHEEL (FWD) ASSY	
161	X-3359-410-1	FLYWHEEL (REV) ASSY	
162	3-359-417-01	BELT (FLAT), CAPSTAN	
163	3-575-321-00	RETAINER, THRUST, CAPSTAN	
* 164	3-359-436-01	BASE (THRUST RETAINER), FITTING	
165	3-359-414-01	SCREW (+PTPWH 2X23)	
166	3-359-450-01	PLATE, GROUND	
167	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	

Ref. No.	Part No.	Description	Remarks
* 168	A-2006-399-A	MD-A BOARD (RA13A), AUDIO	
* 168	A-2006-400-A	MD-B BOARD (RB22A), AUDIO	
169	3-359-466-01	BELT (FR), SQUARE	
* 170	1-634-841-14	LEAF SW (A)BOARD (RA13A) (DECK A)	
* 170	1-634-841-14	LEAF SW (B)BOARD (RB22A) (DECK B)	
171	3-343-419-01	HOLDER (S SENSOR A)	
172	X-3359-404-1	TABLE ASSY, REEL	
173	3-362-308-01	CAP (REEL)	
174	3-356-716-01	SCREW (2X4) (B TIGHT), +P	
HP101	A-2003-868-A	BASE ASSY, HEAD	
HRP101	A-2003-838-A	BASE ASSY, HEAD	
M101A	X-3363-501-1	MOTOR ASSY,REEL (DECK A)	
M101B	X-3363-501-1	MOTOR ASSY,REEL (DECK B)	
M102A	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY (DECK A)	
M102B	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY (DECK B)	
IC81A	8-719-710-03	IC NJL5165K-B	
IC81B	8-719-710-03	IC NJL5165K-B	

7-5. MECHANISM DECK SECTION (2)

(DECK A : TCM-190RA13A)
(DECK B : TCM-190RB22A)
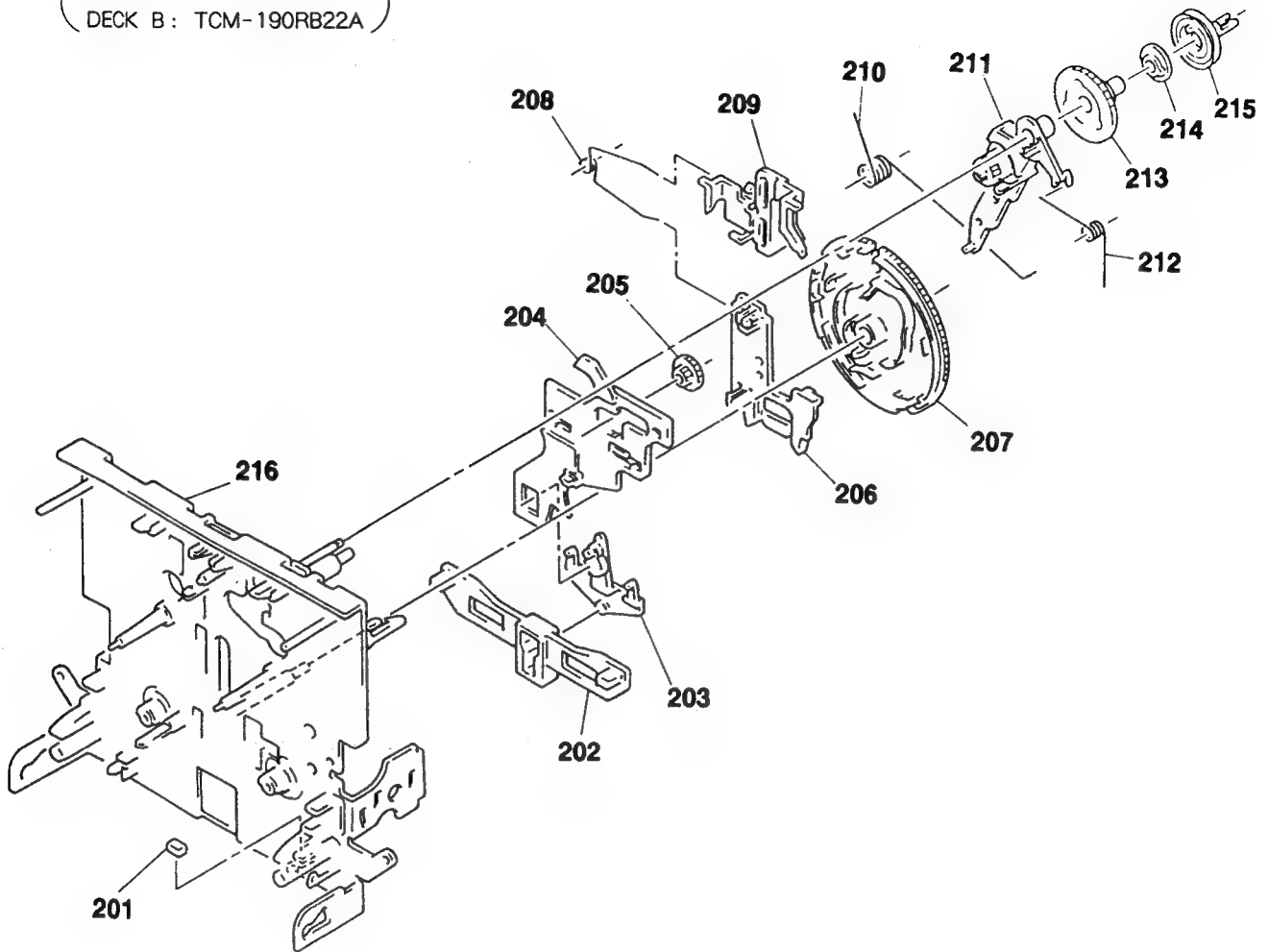
Ref. No.	Part No.	Description	Remarks
201	3-359-469-01	SPACER	
* 202	3-359-425-01	SLIDER (REVERSE SLIDER)	
203	3-359-426-01	LEVER (REVERSE LEVER)	
* 204	3-359-415-01	SLIDER (TRIGGER SLIDER)	
205	3-359-448-01	GEAR (TRIGGER)	
* 206	3-359-427-01	SLIDER (LEVERSE SLIDER)	
207	3-359-420-01	GEAR (CAM GEAR)	
208	3-359-454-01	SPRING, TORSION	
209	3-359-429-01	SLIDER (BRAKE PLATE)	

Ref. No.	Part No.	Description	Remarks
210	3-359-456-01	SPRING(TRIGGER SPRING), TORSION	
211	X-3359-405-1	LEVER (FR ARM) ASSY	
212	3-359-453-01	SPRING (FR ARM), TORSION	
213	3-359-419-01	GEAR (FR GEAR)	
214	3-359-421-01	CLUTCH (REEL DISK)	
215	3-359-418-01	PULLEY (FR PULLEY)	
216	X-3363-790-1	CHASSIS ASSY, MECHANICAL	

(CDM13B-5BD4A)
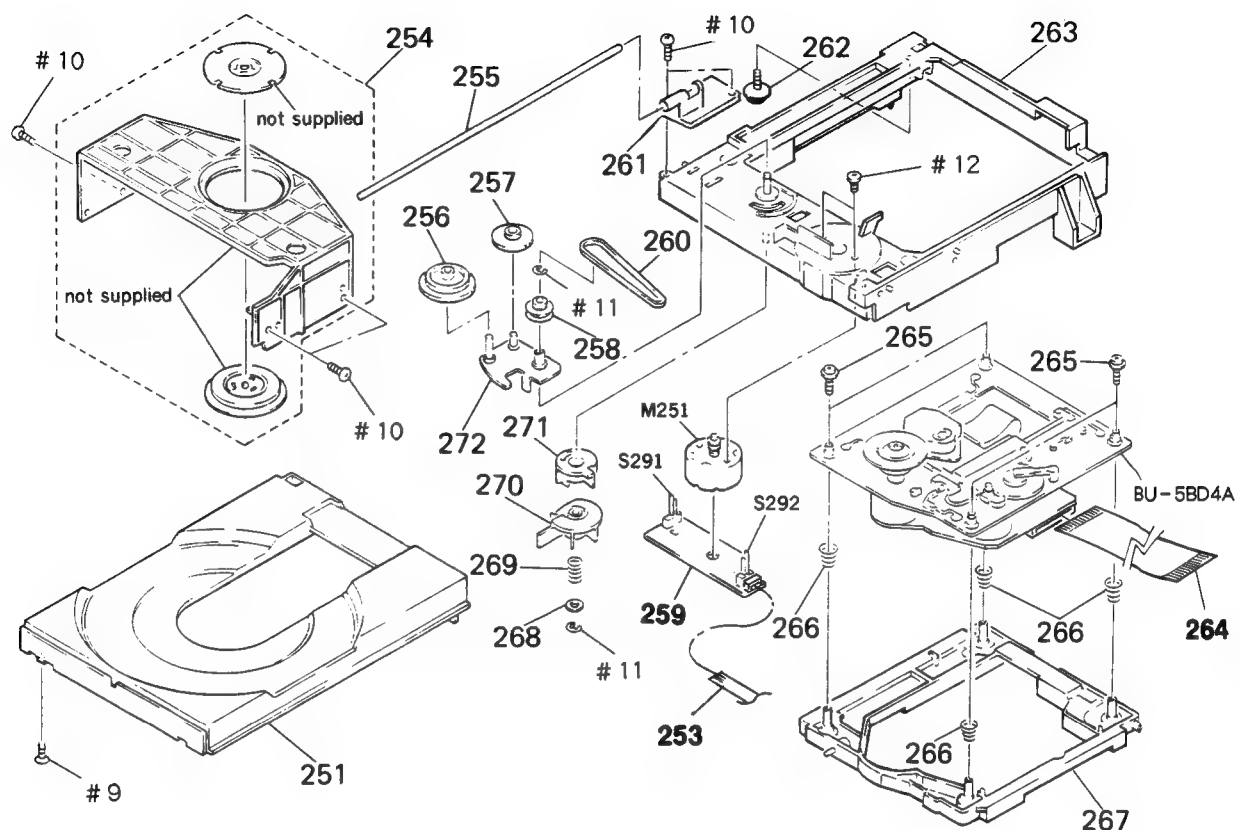
Ref. No.	Part No.	Description	Remarks
251	4-944-012-01	TABLE, DISC	
253	1-590-530-11	WIRE, FLAT TYPE	
254	A-4604-752-A	HOLDER (MG) ASSY	
255	4-929-764-01	SHAFT (TABLE GUIDE)	
256	4-927-620-01	GEAR (P)	
257	4-927-628-01	GEAR (C)	
258	4-929-724-01	PULLEY (B)	
* 259	1-638-308-11	LOADING BOARD	
260	4-927-649-01	BELT	
261	4-944-006-01	BEARING	
* 262	4-917-583-21	BRACKET, YOKE	
263	X-4941-462-1	CHASSIS (MD) ASSY	

Ref. No.	Part No.	Description	Remarks
264	1-690-853-11	WIRE (FLAT TYPE) (19 CORE)	
265	4-933-134-01	SCREW (+PTPWH M2.6X6)	
266	4-917-541-01	SPRING (B)	
267	4-929-747-01	HOLDER (BU)	
268	4-927-654-01	WASHER (LIMITER)	
269	3-659-338-00	SPRING, COMPRESSION	
270	4-929-729-01	CAM (B)	
271	4-929-727-01	CAM (A)	
272	X-4929-703-1	ARM ASSY, SWING	
M251	A-4608-362-A	MOTOR (L) ASSY	
S291	1-571-924-11	SWITCH, LEAF (LOAD OUT)	
S292	1-571-924-11	SWITCH, LEAF (LOAD IN)	

7-7. CD SECTION (2)

(BU-5BD4A)
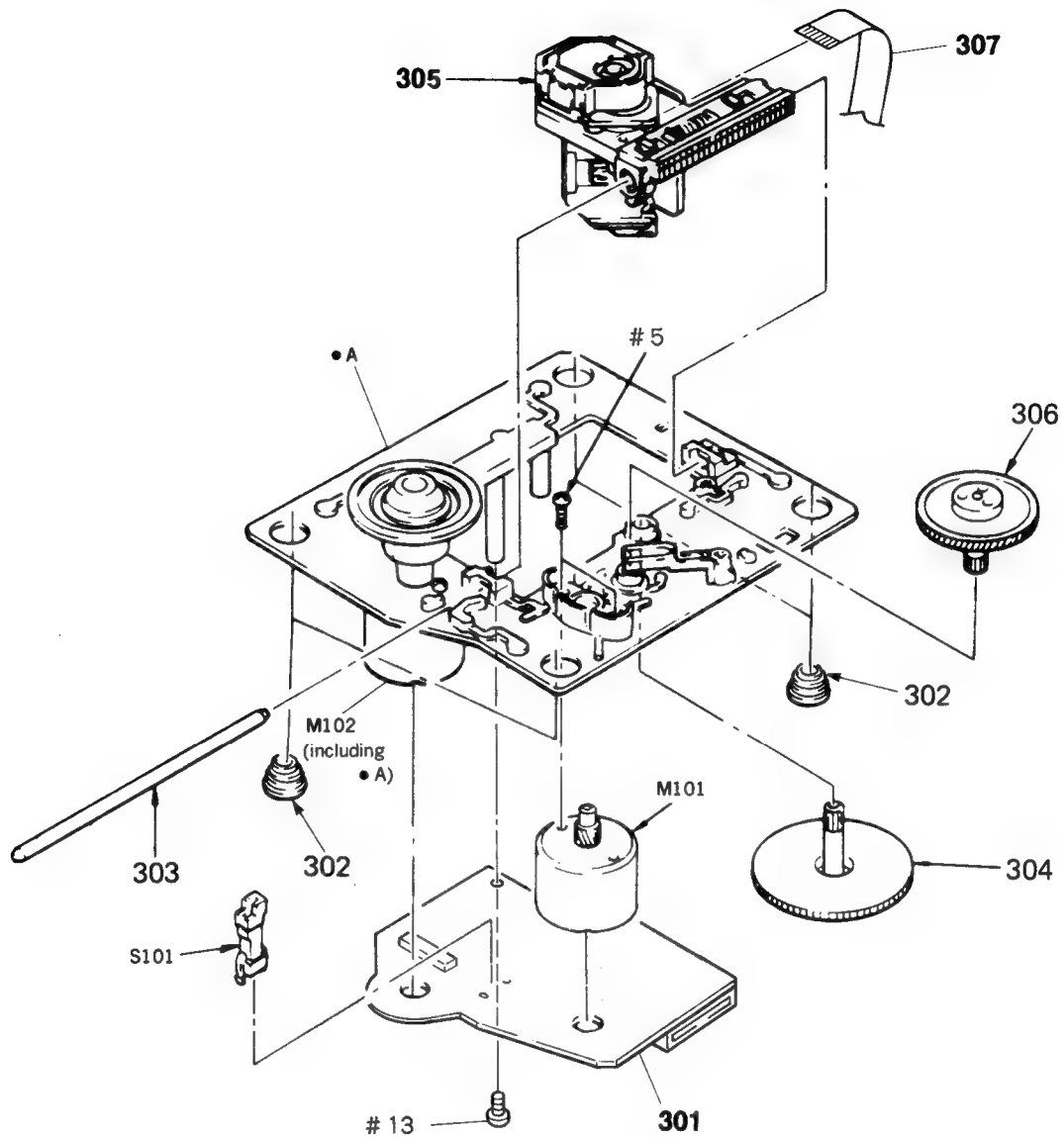
Ref. No.	Part No.	Description	Remarks
* 301	A-4617-937-A	BD BOARD, COMPLETE	
302	4-933-126-01	INSULATOR (A)	
303	4-917-565-01	SHAFT, SLED	
304	4-917-564-01	GEAR (P), FLATNESS	
⚠305	8-848-144-11	DEVICE, OPTICAL KSS-240A	

Ref. No.	Part No.	Description	Remarks
306	4-917-567-01	GEAR (M)	
307	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
M101	X-4917-504-1	MOTOR ASSY (SLED)	
M102	X-4917-523-3	MOTOR ASSY (SPINDLE)	
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)	

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- Items marked "∗" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS :
  uF : μF

- RESISTORS
  All resistors are in ohms.
  METAL : metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- COILS
  uH : μH
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA... : μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

· EA : Saudi Arabia
  AUS : Australian

Ref. No.	Part No.	Description			Remarks
*	A-4617-936-A BD BOARD				
	********				
		< CAPACITOR >			
C101	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C102	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V	
C103	1-135-155-21	TANTALUM CHIP 4.7uF	10%	16V	
C104	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C105	1-126-607-11	ELECT CHIP 47uF	20%	4V	
C106	1-126-607-11	ELECT CHIP 47uF	20%	4V	
C107	1-126-607-11	ELECT CHIP 47uF	20%	4V	
C108	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C109	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C110	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V	
C111	1-164-346-11	CERAMIC CHIP 1uF		16V	
C112	1-164-232-11	CERAMIC CHIP 0.01uF		50V	
C113	1-164-232-11	CERAMIC CHIP 0.01uF		50V	
C114	1-164-695-11	CERAMIC CHIP 0.0022uF	5%	50V	
C115	1-164-695-11	CERAMIC CHIP 0.0022uF	5%	50V	
C117	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C118	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C119	1-164-695-11	CERAMIC CHIP 0.0022uF	5%	50V	
C120	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V	
C151	1-163-019-00	CERAMIC CHIP 0.0068uF	10%	50V	
C152	1-164-346-11	CERAMIC CHIP 1uF		16V	
C153	1-163-135-00	CERAMIC CHIP 560PF	5%	50V	
C154	1-164-695-11	CERAMIC CHIP 0.0022uF	5%	50V	
C155	1-163-023-00	CERAMIC CHIP 0.015uF	5%	50V	
C171	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C172	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C173	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C174	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C201	1-163-809-11	CERAMIC CHIP 0.047uF	10%	25V	
C202	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V	

Ref. No.	Part No.	Description			Remarks
C203	1-164-232-11	CERAMIC CHIP 0.01uF		50V	
C204	1-164-005-11	CERAMIC CHIP 0.47uF		25V	
C205	1-164-346-11	CERAMIC CHIP 1uF		16V	
C206	1-163-093-00	CERAMIC CHIP 10PF	5%	50V	
C207	1-163-093-00	CERAMIC CHIP 10PF	5%	50V	
C208	1-164-346-11	CERAMIC CHIP 1uF		16V	
C209	1-164-346-11	CERAMIC CHIP 1uF		16V	
C210	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C299	1-164-346-11	CERAMIC CHIP 1uF		16V	
C301	1-164-346-11	CERAMIC CHIP 1uF		16V	
C302	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C303	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C304	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C305	1-163-038-00	CERAMIC CHIP 0.1uF		25V	
C306	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V	
C307	1-163-145-00	CERAMIC CHIP 0.0015uF	5%	50V	
C308	1-164-346-11	CERAMIC CHIP 1uF		16V	
C309	1-164-346-11	CERAMIC CHIP 1uF		16V	
C310	1-163-125-00	CERAMIC CHIP 220PF	5%	50V	
C311	1-163-125-00	CERAMIC CHIP 220PF	5%	50V	
C312	1-164-346-11	CERAMIC CHIP 1uF		16V	
C401	1-164-232-11	CERAMIC CHIP 0.01uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-580-858-11	SOCKET, CONNECTOR (SMT) 5P
CN102	1-580-866-11	SOCKET, CONNECTOR (SMT) 12P
CN103	1-580-872-41	SOCKET, CONNECTOR (SMT) 19P

< DIODE >

Ref. No.	Part No.	Description	Remarks
D101	8-719-976-88	DIODE	DTZ3.9B
D201	8-719-988-62	DIODE	1SS355

Ref. No.	Part No.	Description			Remarks
< IC >					
IC101	8-752-053-73	IC CXA1372AQ			
IC102	8-759-823-48	IC LA6525M			
IC103	8-759-636-20	IC M54641FP			
IC201	8-752-337-26	IC CXD2500AQ			
IC202	8-759-059-86	IC uPD75116GF-F21-3BE			
IC203	8-752-337-10	IC CXD2554M			
IC301	8-759-506-63	IC PCM67U			
IC302	8-759-996-43	IC RC4558PS-T1			
< TRANSISTOR >					
Q101	8-729-805-45	TRANSISTOR 2SC3395			
Q201	8-729-602-21	TRANSISTOR 2SC4154			
< RESISTOR >					
R101	1-216-097-00	METAL CHIP	100K	5%	1/10W
R102	1-216-097-00	METAL CHIP	100K	5%	1/10W
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W
R104	1-216-099-00	METAL CHIP	120K	5%	1/10W
R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-114-00	METAL GLAZE	510K	5%	1/10W
R108	1-216-105-00	METAL CHIP	220K	5%	1/10W
R109	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-236-427-11	NETWORK, RES	18K		
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W
R172	1-216-001-00	METAL CHIP	10	5%	1/10W
R173	1-216-001-00	METAL CHIP	10	5%	1/10W
R174	1-216-001-00	METAL CHIP	10	5%	1/10W
R201	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R202	1-216-073-00	METAL CHIP	10K	5%	1/10W
R203	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W
R205	1-216-097-00	METAL CHIP	100K	5%	1/10W
R208	1-216-033-00	METAL CHIP	220	5%	1/10W
R209	1-216-081-00	METAL CHIP	22K	5%	1/10W
R210	1-236-427-11	NETWORK, RES	18K		
R212	1-236-427-11	NETWORK, RES	18K		

Ref. No.	Part No.	Description			Remarks
R214	1-239-039-11	NETWORK, RES 22K			
R218	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R219	1-216-073-00	METAL CHIP	10K	5%	1/10W
R220	1-216-001-00	METAL CHIP	10	5%	1/10W
R222	1-236-427-11	NETWORK, RES	18K		
R223	1-216-081-00	METAL CHIP	22K	5%	1/10W
R224	1-216-081-00	METAL CHIP	22K	5%	1/10W
R225	1-216-081-00	METAL CHIP	22K	5%	1/10W
R226	1-216-081-00	METAL CHIP	22K	5%	1/10W
R230	1-236-413-11	NETWORK, RES	1.2K		
R231	1-236-413-11	NETWORK, RES	1.2K		
R232	1-216-041-00	METAL CHIP	470	5%	1/10W
R233	1-216-041-00	METAL CHIP	470	5%	1/10W
R301	1-236-413-11	NETWORK, RES	1.2K		
R303	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R304	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R305	1-216-097-00	METAL CHIP	100K	5%	1/10W
R306	1-216-097-00	METAL CHIP	100K	5%	1/10W
< VARIABLE RESISTOR >					
RV101	1-241-395-11	RES, ADJ, METAL GLAZE 10K			
RV102	1-241-395-11	RES, ADJ, METAL GLAZE 10K			
< SWITCH >					
SW101	1-572-085-11	SWITCH, LEAF (LIMIT IN)			
< VIBRATOR >					
X201	1-579-280-11	VIBRATOR, CRYSTAL 16MHz			
X202	1-579-216-11	VIBRATOR, CERAMIC 4MHz			

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*	A-4347-469-A	DISPLAY BOARD, COMPLETE (H170:E, EA)
		*********************************
*	A-4347-475-A	DISPLAY BOARD, COMPLETE (H170:AEP, H700)
		***********************************
*	A-4347-483-A	DISPLAY BOARD, COMPLETE (H170K)
		********************************
*	A-4347-544-A	DISPLAY BOARD, COMPLETE (H170:AUS)
		********************************

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C501	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C502	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C503	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C504	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C507	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C508	1-163-038-00	CERAMIC CHIP	0.1uF		25V(H17K)
C511	1-126-157-11	ELECT	10uF	20%	16V
C512	1-126-157-11	ELECT	10uF	20%	16V

DISPLAY

Ref. No.	Part No.	Description				Remarks
C1001	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1002	1-163-025-11	CERAMIC CHIP	0.001uF		50V	
C1003	1-124-442-00	ELECT	330uF	20%	6.3V	
C1003	1-126-924-11	ELECT	330uF	20%	10V(H170K)	
C1004	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1011	1-124-584-00	ELECT	100uF	20%	10V	
C1012	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1013	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C1014	1-126-157-11	ELECT	10uF	20%	16V	
C1015	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1016	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C1020	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C1023	1-163-229-11	CERAMIC CHIP	12PF	5%	50V	
C1024	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C1025	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1026	1-126-177-11	ELECT	100uF	20%	10V	
C1030	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1031	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1032	1-126-154-11	ELECT	47uF	20%	6.3V	
C1033	1-126-154-11	ELECT	47uF	20%	6.3V	
C1034	1-163-025-11	CERAMIC CHIP	0.001uF		50V	
C1035	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1036	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1041	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1050	1-124-910-11	ELECT	47uF	20%	50V	
C1051	1-124-443-00	ELECT	100uF	20%	10V	
C1098	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C1099	1-163-038-00	CERAMIC CHIP	0.1uF		25V	

< FILTER >

CF1001 1-579-599-21 VIBRATOR, CERAMIC

< CONNECTOR >

* CN1001	1-569-156-11	SOCKET, CONNECTOR 10P	
* CN1002	1-569-156-11	SOCKET, CONNECTOR 10P	
* CN1003	1-569-156-11	SOCKET, CONNECTOR 10P (H170K)	
CN1003	1-695-027-11	PLUG, CONNECTOR 10P	
* CN1004	1-568-451-11	HOUSING, CONNECTOR(PC BOARD)10P	
* CN1006	1-565-980-21	HOUSING, CONNECTOR(PC BOARD) 9P	

< DIODE >

Ref. No.	Part No.	Description	
D1001	8-719-820-05	DIODE	1SS181
D1002	8-719-820-05	DIODE	1SS181
D1003	8-719-820-05	DIODE	1SS181
D1004	8-719-820-05	DIODE	1SS181
D1005	8-719-820-05	DIODE	1SS181
D1007	8-719-820-05	DIODE	1SS181
D1030	8-719-021-41	DIODE	UZM5.6X
D1031	8-719-021-41	DIODE	UZM5.6X
D1051	8-719-026-64	DIODE	SML1260S
D1052	8-719-026-64	DIODE	SML1260S

Ref. No.	Part No.	Description		Remarks
D1053	8-719-026-64	DIODE	SML1260S	
D1054	8-719-026-64	DIODE	SML1260S	
D1055	8-719-026-64	DIODE	SML1260S	
D1057	8-719-026-64	DIODE	SML1260S (H170K)	
D1058	8-719-026-68	DIODE	SML1960A	
D1059	8-719-026-68	DIODE	SML1960A	

< INDICATOR >

FL1001 1-519-718-11 INDICATOR TUBE, FLUORESCENT

< IC >

IC106	8-759-927-29	IC	SN74HCU04ANS
IC501	8-759-996-43	IC	RC4558PS
IC1001	8-759-059-81	IC	uPD78012GC-502-AB8
IC1002	8-759-500-31	IC	X24C01P
IC1003	8-759-991-11	IC	XR1091DCP
IC1004	8-759-516-41	IC	CD4052BCM
IC1005	8-749-923-34	IC	PHOTO DIODE GP1U59XB
IC1006	8-759-512-44	IC	SN755703FT
IC1007	8-759-512-44	IC	SN755703FT

< JUMPER RESISTOR >

JW1001	1-216-295-00	METAL CHIP	0	5%	1/10W(H170, H700)
JW1002	1-216-295-00	METAL CHIP	0	5%	1/10W(H170, H700)
JW1004	1-216-295-00	METAL CHIP	0	5%	1/10W(H170, H700)
JW1029	1-216-295-00	METAL CHIP	0	5%	1/10W(H170, H700)
JW1050	1-216-295-00	METAL CHIP	0	5%	1/10W(H170:E, EA)

< TRANSISTOR >

Q601	8-729-141-26	TRANSISTOR	2SC3622A-LK
Q1001	8-729-900-61	TRANSISTOR	DTA114ES
Q1002	8-729-900-80	TRANSISTOR	DTC114ES
Q1003	8-729-900-61	TRANSISTOR	DTA114ES
Q1004	8-729-805-43	TRANSISTOR	2SC3396
Q1051	8-729-620-05	TRANSISTOR	2SC2603-EF

< RESISTOR >

R501	1-216-073-00	METAL CHIP	10K	5%	1/10W
R502	1-216-073-00	METAL CHIP	10K	5%	1/10W(H170K)
R503	1-216-097-00	METAL CHIP	100K	5%	1/10W
R504	1-216-097-00	METAL CHIP	100K	5%	1/10W
R505	1-216-073-00	METAL CHIP	10K	5%	1/10W
R506	1-216-073-00	METAL CHIP	10K	5%	1/10W(H170K)
R507	1-216-073-00	METAL CHIP	10K	5%	1/10W
R508	1-216-077-00	METAL CHIP	15K	5%	1/10W
R509	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R510	1-216-069-00	METAL CHIP	6.8K	5%	1/10W

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks
R511	1-216-097-00	METAL CHIP	100K	5%	1/10W		R1070	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R512	1-216-105-00	METAL CHIP	220K	5%	1/10W		R1071	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R513	1-216-105-00	METAL CHIP	220K	5%	1/10W		R1072	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R514	1-216-105-00	METAL CHIP	220K	5%	1/10W		R1073	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R515	1-216-105-00	METAL CHIP	220K	5%	1/10W		R1074	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R516	1-216-113-00	METAL CHIP	470K	5%	1/10W		R1075	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R517	1-216-113-00	METAL CHIP	470K	5%	1/10W(H170K)		R1076	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1001	1-216-089-00	METAL CHIP	47K	5%	1/10W		R1077	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1002	1-216-073-00	METAL CHIP	10K	5%	1/10W		R1078	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1003	1-216-049-00	METAL CHIP	1K	5%	1/10W		R1079	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1003	1-216-295-00	METAL CHIP	0	5%	1/10W(H170K)		R1080	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1004	1-216-097-00	METAL CHIP	100K	5%	1/10W		R1081	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1006	1-216-073-00	METAL CHIP	10K	5%	1/10W		R1082	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1016	1-216-295-00	METAL CHIP	0	5%	1/10W(H170K)		R1083	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1007	1-216-025-00	METAL CHIP	100	5%	1/10W		R1084	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1008	1-216-073-00	METAL CHIP	10K	5%	1/10W		R1085	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1010	1-216-041-00	METAL CHIP	470	5%	1/10W		R1086	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1011	1-216-045-00	METAL CHIP	680	5%	1/10W		R1087	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1012	1-216-049-00	METAL CHIP	1K	5%	1/10W		R1088	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1013	1-216-089-00	METAL CHIP	47K	5%	1/10W		R1091	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R1014	1-216-109-00	METAL CHIP	330K	5%	1/10W		R1092	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R1015	1-216-025-00	METAL CHIP	100	5%	1/10W		R1093	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R1017	1-216-041-00	METAL CHIP	470	5%	1/10W		R1094	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R1018	1-216-045-00	METAL CHIP	680	5%	1/10W		R1095	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1019	1-216-049-00	METAL CHIP	1K	5%	1/10W		R1096	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1020	1-216-053-00	METAL CHIP	1.5K	5%	1/10W		R1100	1-216-037-00	METAL CHIP	330	5%	1/10W	
R1021	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R1101	1-216-037-00	METAL CHIP	330	5%	1/10W	
R1022	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R1102	1-216-037-00	METAL CHIP	330	5%	1/10W	
R1023	1-216-075-00	METAL CHIP	12K	5%	1/10W		R1103	1-216-037-00	METAL CHIP	330	5%	1/10W(H170K)	
R1024	1-216-041-00	METAL CHIP	470	5%	1/10W		R1115	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1025	1-216-045-00	METAL CHIP	680	5%	1/10W		R1116	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1026	1-216-049-00	METAL CHIP	1K	5%	1/10W		R1130	1-216-017-00	METAL CHIP	47	5%	1/10W	
R1027	1-216-053-00	METAL CHIP	1.5K	5%	1/10W		R1131	1-216-017-00	METAL CHIP	47	5%	1/10W	
R1028	1-216-049-00	METAL CHIP	1K	5%	1/10W(H170K)		R1132	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R1030	1-216-113-00	METAL CHIP	470K	5%	1/10W		R1201	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	

Ref. No.	Part No.	Description				Remarks
R1050	1-216-041-00	METAL CHIP	470	5%	1/10W (H170:AEP, H700)	
R1050	1-216-295-00	METAL CHIP	0	5%	1/10W (H170:AUS, H170K)	
R1060	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1061	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1062	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1063	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1064	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1065	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R1066	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R1067	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1068	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R1069	1-216-049-00	METAL CHIP	1K	5%	1/10W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remarks
RV501	1-241-876-11	RES, VAR, CARBON 50K (MIC 1 LEVEL)(H170K)	
RV502	1-241-876-11	RES, VAR, CARBON 50K (MIC 2 LEVEL)(H170K)	
RV503	1-241-876-11	RES, VAR, CARBON 50K (ECHO LEVEL)(H170K)	

< SWITCH >

Ref. No.	Part No.	Description	Remarks
S1001	1-572-184-11	SWITCH, KEYBOARD (POWER)	
S1002	1-572-184-11	SWITCH, KEYBOARD (TIMER)	
S1003	1-572-184-11	SWITCH, KEYBOARD (MPX)(H170K)	
S1009	1-572-184-11	SWITCH, KEYBOARD (+)	
S1010	1-572-184-11	SWITCH, KEYBOARD (BAND)	

Ref. No.	Part No.	Description	Remarks
S1011	1-572-184-11	SWITCH, KEYBOARD (-)	
S1012	1-572-184-11	SWITCH, KEYBOARD (FUNCTION)	
S1013	1-572-184-11	SWITCH, KEYBOARD (KARAOKE)	
S1014	1-572-184-11	SWITCH, KEYBOARD (PRESET)	
S1015	1-572-184-11	SWITCH, KEYBOARD (EQ)	
S1016	1-572-184-11	SWITCH, KEYBOARD (TIMER REC)	
S1017	1-572-184-11	SWITCH, KEYBOARD (MEMORY/NEXT)	
S1018	1-572-184-11	SWITCH, KEYBOARD (STEREO/MONO)	
S1019	1-572-184-11	SWITCH, KEYBOARD (+)	
S1020	1-572-184-11	SWITCH, KEYBOARD (-)	
S1021	1-572-184-11	SWITCH, KEYBOARD (DBFB)	

< VIBRATOR >

| X1002 | 1-527-997-21 | VIBRATOR, CRYSTAL 32kHZ | |

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| * | | 1-634-841-14 | LEAF SW(A) BOARD (RA13A) | |

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| | | 3-343-419-01 | HOLDER (S SENSER A) | |

< CONNECTOR >

| * CNP81 | 1-568-852-11 | SOCKET, CONNECTOR 9P | |

< IC >

| IC81A | 8-719-710-03 | IC NJL5165K-B | |

< RESISTOR >

| R84 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R85 | 1-249-408-11 | CARBON | 180 | 5% | 1/4W | |

< SWITCH >

S81	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S86	1-571-281-21	SWITCH, LEAF (HALF DET)	

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| * | | 1-634-841-14 | LEAF SW(B) BOARD (RB22A) | |

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| | | 3-343-419-01 | HOLDER (S SENSER A) | |

< CONNECTOR >

| * CNP81 | 1-568-852-11 | SOCKET, CONNECTOR 9P | |

< IC >

| IC81B | 8-719-710-03 | IC NJL5165K-B | |

Ref. No.	Part No.	Description	Remarks

< RESISTOR >

R81	1-249-414-11	CARBON	560	5%	1/4W	
R82	1-247-818-11	CARBON	300	5%	1/4W	
R83	1-247-834-11	CARBON	1.3K	5%	1/4W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-249-408-11	CARBON	180	5%	1/4W	

< SWITCH >

S81	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S83	1-571-281-21	SWITCH, LEAF (METAL HALF)	
S84	1-571-281-21	SWITCH, LEAF (ERASE PROOF)	
S85	1-571-281-21	SWITCH, LEAF (ERASE PROOF)	
S86	1-571-281-21	SWITCH, LEAF (HALF DET)	

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| * | | 1-638-308-11 | LOADING BOARD | |

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< CONNECTOR >

| CN201 | 1-580-918-11 | HOUSING, CONNECTOR 5P | |

< SWITCH >

| S291 | 1-571-924-11 | SWITCH, LEAF (LOAD OUT) | |
| S292 | 1-571-924-11 | SWITCH, LEAF (LOAD IN) | |

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| * | | A-4343-548-A | MAIN BOARD, COMPLETE (H170:E, EA) | |

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| * | | A-4343-553-A | MAIN BOARD, COMPLETE (H170K) | |

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| * | | A-4343-554-A | MAIN BOARD, COMPLETE (H170:AEP) | |

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| * | | A-4343-558-A | MAIN BOARD, COMPLETE (H700) | |

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| * | | A-4343-575-A | MAIN BOARD, COMPLETE (H170:AUS) | |

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< CAPACITOR >

C1	1-162-195-31	CERAMIC	4.7PF	10%	50V	
				(H170, H170K)		
C2	1-124-907-11	ELECT	10uF	20%	50V	
C3	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C4	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C5	1-101-005-00	CERAMIC	22000PF		50V	
C6	1-162-851-11	CERAMIC	0.1uF	20%	16V	
				(H170:E, EA, AUS, H170K)		
C7	1-101-005-00	CERAMIC	22000PF		50V	
C8	1-101-005-00	CERAMIC	22000PF		50V	
				(H170:AEP, H700)		

Ref. No.	Part No.	Description				Remarks
C9	1-102-120-00	CERAMIC	0.0018uF	10%	50V	
						(H170:AEP, H700)
C10	1-161-374-11	CERAMIC	0.0015uF	20%	50V	
						(H170:AEP, H700)
C21	1-161-379-00	CERAMIC	0.01uF	20%	25V	
						(H170:E, EA, AUS, H170K)
C22	1-102-947-00	CERAMIC	10PF	5%	50V	
						(H170:E, EA, AUS, H170K)
C23	1-136-162-00	FILM	0.056uF	5%	50V	
						(H170:E, EA, AUS, H170K)
C24	1-101-005-00	CERAMIC	22000PF		50V	
						(H170:E, EA, AUS, H170K)
C51	1-164-056-11	CERAMIC	27PF	5%	50V	
C52	1-164-056-11	CERAMIC	27PF	5%	50V	
C53	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C54	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C55	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C56	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C57	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C58	1-124-907-11	ELECT	10uF	20%	50V	
C59	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C60	1-124-477-11	ELECT	47uF	20%	25V	
C61	1-124-925-11	ELECT	2.2uF	20%	100V	
C62	1-136-153-00	FILM	0.01uF	5%	50V	
C63	1-124-463-00	ELECT	0.1uF	20%	50V	
C64	1-124-902-00	ELECT	0.47uF	20%	50V	
						(H170:AEP, H700)
C65	1-136-157-00	FILM	0.022uF	5%	50V	
						(H170:AEP, H700)
C66	1-136-157-00	FILM	0.022uF	5%	50V	
						(H170:AEP, H700)
C81	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C82	1-124-472-11	ELECT	470uF	20%	10V	
C83	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C84	1-124-907-11	ELECT	10uF	20%	50V	
C85	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C86	1-162-282-31	CERAMIC	100PF	10%	50V	
C87	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C88	1-124-907-11	ELECT	10uF	20%	50V	
C89	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C90	1-124-477-11	ELECT	47uF	20%	25V	
C91	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C92	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C93	1-161-375-00	CERAMIC	0.0022uF	20%	50V	
C94	1-161-375-00	CERAMIC	0.0022uF	20%	50V	
C95	1-124-903-11	ELECT	1uF	20%	50V	
C96	1-124-903-11	ELECT	1uF	20%	50V	
C97	1-124-903-11	ELECT	1uF	20%	50V	
C98	1-124-903-11	ELECT	1uF	20%	50V	
C99	1-136-154-00	FILM	0.012uF	5%	50V	
C100	1-136-154-00	FILM	0.012uF	5%	50V	

Ref. No.	Part No.	Description				Remarks
C101	1-124-907-11	ELECT	10uF	20%	50V	
C102	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C103	1-124-463-00	ELECT	0.1uF	20%	50V	
C104	1-126-160-11	ELECT	1uF	20%	50V	
C105	1-126-160-11	ELECT	1uF	20%	50V	
C106	1-124-903-11	ELECT	1uF	20%	50V	
C108	1-162-211-31	CERAMIC	33PF	5%	50V	
C109	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C110	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C111	1-123-382-00	ELECT	3.3uF	20%	100V	
C112	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C114	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C115	1-164-159-11	CERAMIC	0.1uF		50V	
C116	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C140	1-126-926-11	ELECT	1000uF	20%	10V	
C141	1-162-282-31	CERAMIC	100PF	10%	50V	
C142	1-162-282-31	CERAMIC	100PF	10%	50V	
C200	1-102-120-00	CERAMIC	0.0018uF	10%	50V	
C201	1-162-282-31	CERAMIC	100PF	10%	50V	
C202	1-162-215-31	CERAMIC	47PF	5%	50V	
C203	1-136-172-00	FILM	0.39uF	5%	50V (H170K)	
C204	1-130-471-00	MYLAR	0.001uF	5%	50V (H170K)	
C205	1-124-927-11	ELECT	4.7uF	20%	100V	
C206	1-162-286-31	CERAMIC	220PF	10%	50V	
C207	1-124-254-00	ELECT	0.68uF	20%	50V	
C208	1-124-252-00	ELECT	0.33uF	20%	50V	
C209	1-124-252-00	ELECT	0.33uF	20%	50V	
C210	1-136-167-00	FILM	0.15uF	5%	50V	
C211	1-136-166-00	FILM	0.12uF	5%	50V	
C212	1-136-162-00	FILM	0.056uF	5%	50V	
C213	1-136-161-00	FILM	0.047uF	5%	50V	
C214	1-136-157-00	FILM	0.022uF	5%	50V	
C215	1-136-156-00	FILM	0.018uF	5%	50V	
C216	1-130-482-00	MYLAR	0.0082uF	5%	50V	
C217	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C218	1-130-477-00	MYLAR	0.0033uF	5%	50V	
C219	1-136-157-00	FILM	0.022uF	5%	50V	
C220	1-126-096-11	ELECT	10uF	20%	35V	
C221	1-162-286-31	CERAMIC	220PF	10%	50V	
C222	1-162-294-31	CERAMIC	0.001uF	10%	50V	
						(H170, H700)
C224	1-124-252-00	ELECT	0.33uF	20%	50V	
C225	1-124-254-00	ELECT	0.68uF	20%	50V	
C227	1-164-159-11	CERAMIC	0.1uF		50V	
C228	1-124-907-11	ELECT	10uF	20%	50V	
C231	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C241	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C242	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C243	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C247	1-124-925-11	ELECT	2.2uF	20%	100V	
C248	1-164-159-11	CERAMIC	0.1uF		50V (H170K)	

MAIN (including POWER)

Ref. No.	Part No.	Description			Remarks
C249	1-164-159-11 CERAMIC	0.1uF			50V(H170K)
C250	1-102-120-00 CERAMIC	0.0018uF	10%	50V	
C251	1-162-282-31 CERAMIC	100PF	10%	50V	
C252	1-162-215-31 CERAMIC	47PF	5%	50V	
C253	1-136-172-00 FILM	0.39uF	5%	50V(H170K)	
C254	1-130-471-00 MYLAR	0.001uF	5%	50V(H170K)	
C255	1-124-927-11 ELECT	4.7uF	20%	100V	
C256	1-162-286-31 CERAMIC	220PF	10%	50V	
C257	1-124-254-00 ELECT	0.68uF	20%	50V	
C258	1-124-252-00 ELECT	0.33uF	20%	50V	
C259	1-124-252-00 ELECT	0.33uF	20%	50V	
C260	1-136-167-00 FILM	0.15uF	5%	50V	
C261	1-136-166-00 FILM	0.12uF	5%	50V	
C262	1-136-162-00 FILM	0.056uF	5%	50V	
C263	1-136-161-00 FILM	0.047uF	5%	50V	
C264	1-136-157-00 FILM	0.022uF	5%	50V	
C265	1-136-156-00 FILM	0.018uF	5%	50V	
C266	1-130-482-00 MYLAR	0.0082uF	5%	50V	
C267	1-130-481-00 MYLAR	0.0068uF	5%	50V	
C268	1-130-477-00 MYLAR	0.0033uF	5%	50V	
C269	1-136-157-00 FILM	0.022uF	5%	50V	
C270	1-126-096-11 ELECT	10uF	20%	35V	
C271	1-162-286-31 CERAMIC	220PF	10%	50V	
C272	1-162-294-31 CERAMIC	0.001uF	10%	50V	
					(H170,H700)
C274	1-124-252-00 ELECT	0.33uF	20%	50V	
C275	1-124-254-00 ELECT	0.68uF	20%	50V	
C277	1-164-159-11 CERAMIC	0.1uF		50V	
C281	1-161-379-00 CERAMIC	0.01uF	20%	25V	
C290	1-164-159-11 CERAMIC	0.1uF		50V	
C291	1-164-159-11 CERAMIC	0.1uF		50V	
C292	1-164-159-11 CERAMIC	0.1uF		50V	
C293	1-164-159-11 CERAMIC	0.1uF		50V	
C301	1-162-282-31 CERAMIC	100PF	10%	50V	
C302	1-162-282-31 CERAMIC	100PF	10%	50V	
C303	1-130-474-00 MYLAR	0.0018uF	5%	50V	
					(H170:AEP,H700)
C304	1-130-480-00 MYLAR	0.0056uF	5%	50V	
					(H170:AEP,H700)
C305	1-124-907-11 ELECT	10uF	20%	50V	
					(H170:AEP,H700)
C306	1-124-903-11 ELECT	1uF	20%	50V	
C307	1-164-159-11 CERAMIC	0.1uF		50V	
C308	1-164-159-11 CERAMIC	0.1uF		50V	
					(H170:AEP,H700)
C320	1-162-282-31 CERAMIC	100PF	10%	50V	
					(H170:AEP,H700)
C351	1-162-282-31 CERAMIC	100PF	10%	50V	
C352	1-162-282-31 CERAMIC	100PF	10%	50V	
C353	1-130-474-00 MYLAR	0.0018uF	5%	50V	
					(H170:AEP,H700)
C354	1-130-480-00 MYLAR	0.0056uF	5%	50V	
					(H170:AEP,H700)

Ref. No.	Part No.	Description			Remarks
C355	1-124-907-11 ELECT	10uF	20%	50V	
					(H170:AEP,H700)
C356	1-124-903-11 ELECT	1uF	20%	50V	
C357	1-164-159-11 CERAMIC	0.1uF		50V	
C358	1-164-159-11 CERAMIC	0.1uF		50V	
					(H170:AEP,H700)
C370	1-162-282-31 CERAMIC	100PF	10%	50V	
					(H170:AEP,H700)
C418	1-126-916-11 ELECT	1000uF	20%	6.3V	
C419	1-126-157-11 ELECT	10uF	20%	16V	
C420	1-126-157-11 ELECT	10uF	20%	16V	
C801	1-124-907-11 ELECT	10uF	20%	50V	
C802	1-162-290-31 CERAMIC	470PF	10%	50V	
C803	1-126-233-11 ELECT	22uF	20%	50V	
C848	1-126-233-11 ELECT	22uF	20%	50V	
C851	1-124-907-11 ELECT	10uF	20%	50V	
C852	1-162-290-31 CERAMIC	470PF	10%	50V	
C853	1-126-233-11 ELECT	22uF	20%	50V	
C871	1-126-953-11 ELECT	2200uF	20%	35V	
C872	1-126-953-11 ELECT	2200uF	20%	35V	
C873	1-124-120-11 ELECT	220uF	20%	25V	
C874	1-124-484-11 ELECT	220uF	20%	35V	
C875	1-126-233-11 ELECT	22uF	20%	50V	
C876	1-124-907-11 ELECT	10uF	20%	50V	
C877	1-126-233-11 ELECT	22uF	20%	50V	
C878	1-124-910-11 ELECT	47uF	20%	50V	
C879	1-124-910-11 ELECT	47uF	20%	50V	
C880	1-124-910-11 ELECT	47uF	20%	50V	
C883	1-162-207-31 CERAMIC	22PF	5%	50V	
C884	1-162-207-31 CERAMIC	22PF	5%	50V	
C891	1-164-159-11 CERAMIC	0.1uF		50V	
C892	1-164-159-11 CERAMIC	0.1uF		50V	
C893	1-164-159-11 CERAMIC	0.1uF		50V	
C894	1-164-159-11 CERAMIC	0.1uF		50V	
C898	1-126-233-11 ELECT	22uF	20%	50V	
C899	1-136-161-00 FILM	0.047uF	5%	50V	
C901	1-124-564-11 ELECT	4700uF	20%	25V	
C902	1-124-927-11 ELECT	4.7uF	20%	100V	
C903	1-124-927-11 ELECT	4.7uF	20%	100V	
C904	1-126-233-11 ELECT	22uF	20%	50V	
C905	1-124-927-11 ELECT	4.7uF	20%	100V	
C906	1-124-927-11 ELECT	4.7uF	20%	100V	
C908	1-124-907-11 ELECT	10uF	20%	50V	
C909	1-124-907-11 ELECT	10uF	20%	50V	
C910	1-124-910-11 ELECT	47uF	20%	50V	
C911	1-124-910-11 ELECT	47uF	20%	50V	
C912	1-124-910-11 ELECT	47uF	20%	50V	
C913	1-161-379-00 CERAMIC	0.01uF	20%	25V	
C922	1-124-564-11 ELECT	4700uF	20%	25V	
C923	1-124-252-00 ELECT	0.33uF	20%	50V	
C924	1-124-464-11 ELECT	0.22uF	20%	50V	
C951	1-124-907-11 ELECT	10uF	20%	50V	
C952	1-126-160-11 ELECT	1uF	20%	50V	

Ref. No.	Part No.	Description				Remarks
C953	1-124-903-11	ELECT	1uF	20%	50V	
C954	1-124-120-11	ELECT	220uF	20%	25V	
C999	1-101-005-00	CERAMIC	22000PF		50V	
C2002	1-124-907-11	ELECT	10uF	20%	50V	
C2052	1-124-907-11	ELECT	10uF	20%	50V	
C9001	1-124-907-11	ELECT	10uF	20%	50V	
C9002	1-124-034-51	ELECT	33uF	20%	16V	

< CIRCUIT BREAKER >

Ref. No.	Part No.	Description	Remarks
CB801	1-532-564-00	BREAKER, CIRCUIT 2.2A	
CB851	1-532-564-00	BREAKER, CIRCUIT 2.2A	

< FILTER >

Ref. No.	Part No.	Description	Remarks
CF1	1-567-389-11	FILTER, CERAMIC	
CF81	1-567-389-11	FILTER, CERAMIC	

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
* CN201	1-569-155-11	PLUG, CONNECTOR 10P	
* CN202	1-569-155-11	PLUG, CONNECTOR 10P	
CN203	1-695-026-11	SOCKET, CONNECTOR 10P	
* CN204	1-568-828-11	SOCKET, CONNECTOR 9P	
* CN205	1-566-973-21	PIN, CONNECTOR (PC BOARD) 8P	
* CN206	1-566-973-21	PIN, CONNECTOR (PC BOARD) 8P	
* CN207	1-573-085-11	CONNECTOR, FPC (NON ZIF) 19P	
* CN401	1-568-852-11	SOCKET, CONNECTOR 9P	
* CN402	1-568-455-11	PIN, CONNECTOR (PC BOARD) 10P	
* CN403	1-568-847-11	SOCKET, CONNECTOR 4P	
* CN404	1-695-070-11	CONNECTOR, FFC/FPC 11P	
* CN801	1-562-573-11	SOCKET, CONNECTOR 8P	
* CN802	1-564-510-11	PLUG, CONNECTOR 7P	
* CN803	1-564-509-11	PLUG, CONNECTOR 6P	
* CN804	1-695-069-11	CONNECTOR, FFC/FPC 11P	
* CN901	1-564-510-11	PLUG, CONNECTOR 7P	
* CN902	1-564-509-11	PLUG, CONNECTOR 6P	

< TRIMMER >

Ref. No.	Part No.	Description	Remarks
CT21	1-141-227-00	CAP, TRIMMER 20PF (H170:E, EA, AUS, H170K)	
CT22	1-141-227-00	CAP, TRIMMER 20PF (H170:E, EA, AUS, H170K)	

< DIODE >

Ref. No.	Part No.	Description	Remarks
D21	8-719-976-30	DIODE	KV1560N (H170:E, EA, AUS, H170K)
D81	8-719-987-63	DIODE	1N4148M
D202	8-719-987-63	DIODE	1N4148M
D205	8-719-933-33	DIODE	HZS6A1L (H170K)
D206	8-719-933-33	DIODE	HZS6A1L
D207	8-719-933-33	DIODE	HZS6A1L (H170K)

Ref. No.	Part No.	Description		Remarks
D208	8-719-987-63	DIODE	1N4148M	
D401	8-719-987-63	DIODE	1N4148M	
D801	8-719-987-63	DIODE	1N4148M	
D901	8-719-200-82	DIODE	11ES2	
D902	8-719-200-82	DIODE	11ES2	
D904	8-719-933-41	DIODE	HZS6C3L	
D905	8-719-200-82	DIODE	11ES2	
D906	8-719-200-82	DIODE	11ES2	
D907	8-719-011-22	DIODE	UZ-36BSB	
D909	8-719-001-15	DIODE	UZL-9M2	
D910	8-719-987-63	DIODE	1N4148M	
D914	8-719-987-63	DIODE	1N4148M	
D915	8-719-987-63	DIODE	1N4148M	
D916	8-719-987-63	DIODE	1N4148M	
D921	8-719-987-63	DIODE	1N4148M	
D923	8-719-200-82	DIODE	11ES2	
D924	8-719-200-82	DIODE	11ES2	

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
* DIP801	1-562-327-00	SOCKET, CONNECTOR 3P	
* DIP802	1-562-327-00	SOCKET, CONNECTOR 3P	
* DIP803	1-562-327-00	SOCKET, CONNECTOR 3P	
* DIP804	1-562-327-00	SOCKET, CONNECTOR 3P	

< FRONTEND >

Ref. No.	Part No.	Description	Remarks
FE1	1-465-673-11	FRONTEND (2 BAND)	
FE2	1-236-462-11	ENCAPSULATED COMPONENT (H170:AEP, H700)	
FE2	1-236-777-11	ENCAPSULATED COMPONENT (H170:E, EA, AUS, H170K)	
FE3	1-236-463-11	ENCAPSULATED COMPONENT (H170:AEP, H700)	

< IC >

Ref. No.	Part No.	Description		Remarks
IC51	8-759-820-91	IC	LC7218	
IC81	8-759-821-45	IC	LA1851N	
IC201	8-759-603-14	IC	M5229P	
IC231	8-759-000-49	IC	MC14066BCP	
IC232	8-759-634-51	IC	M5218AF	
IC234	8-759-822-26	IC	LC7522K	
IC236	8-759-000-49	IC	MC14066BCP (H170K)	
IC251	8-759-603-14	IC	M5229P	
IC301	8-759-634-51	IC	M5218AF (H170:AEP, H700)	
IC302	8-759-000-48	IC	MC14052BCP	
IC406	8-759-820-62	IC	LB1639	
IC801	8-749-920-13	IC	STK-4132MK2	
IC901	8-759-602-66	IC	M5230L-A	
IC902	8-759-821-93	IC	LA5601	
IC9001	8-759-520-90	IC	PST572E	

MAIN (including POWER)

Ref. No.	Part No.	Description		Remarks
		< IFT >		
IFT81	1-404-713-11	TRANSFORMER, IF		
IFT82	1-404-807-11	TRANSFORMER, DISCRIMINATOR		
		< JACK >		
J301	1-569-181-11	JACK, PIN 2P (VIDEO/AUX)		
		< COIL >		
L1	1-408-425-00	INDUCTOR	220uH (H170:AEP, H700)	
L81	1-408-399-00	INDUCTOR	1.5uH	
L83	1-410-489-11	INDUCTOR	390uH	
		< FILTER >		
LPF81	1-235-164-00	FILTER, LOW PASS		
LPF82	1-235-164-00	FILTER, LOW PASS		
		< TRANSISTOR >		
Q1	8-729-620-19	TRANSISTOR	2SC2724-CD	
Q4	8-729-900-61	TRANSISTOR	DTA114ES	
Q5	8-729-900-80	TRANSISTOR	DTC114ES	
Q7	8-729-119-76	TRANSISTOR	2SA1175-HFE	
Q8	8-729-119-76	TRANSISTOR	2SA1175-HFE	
Q9	8-729-900-80	TRANSISTOR	DTC114ES	
Q10	8-729-900-74	TRANSISTOR	DTC143TS (H170:AEP, H700)	
Q10	8-729-900-80	TRANSISTOR	DTC114ES	
			(H170:E, EA, AUS, H170K)	
Q11	8-729-620-05	TRANSISTOR	2SC2603-EF	
			(H170:E, EA, AUS, H170K)	
Q51	8-729-202-67	TRANSISTOR	2SK246-GR3	
Q52	8-729-201-83	TRANSISTOR	2SC3112-A	
Q53	8-729-202-67	TRANSISTOR	2SK246-GR3 (H170:AEP, H700)	
Q54	8-729-201-83	TRANSISTOR	2SC3112 (H170:AEP, H700)	
Q101	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q102	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q103	8-729-900-80	TRANSISTOR	DTC114ES	
Q201	8-729-202-67	TRANSISTOR	2SK246-GR3	
Q202	8-729-141-26	TRANSISTOR	2SC3622A-LK	
Q231	8-729-900-63	TRANSISTOR	DTA124ES (H170K)	
Q232	8-729-900-63	TRANSISTOR	DTA124ES	
Q233	8-729-119-76	TRANSISTOR	2SA1175-HFE	
Q234	8-729-900-63	TRANSISTOR	DTA124ES	
Q235	8-729-900-63	TRANSISTOR	DTA124ES (H170K)	
Q236	8-729-900-80	TRANSISTOR	DTC114ES (H170K)	
Q237	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q251	8-729-202-67	TRANSISTOR	2SK246-GR3	
Q252	8-729-141-26	TRANSISTOR	2SC3622A-LK	
Q301	8-729-900-61	TRANSISTOR	DTA114ES	
Q302	8-729-900-61	TRANSISTOR	DTA114ES	

Ref. No.	Part No.	Description		Remarks
Q901	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q903	8-729-209-15	TRANSISTOR	2SD2012	
Q904	8-729-141-83	TRANSISTOR	2SB1094-LK	
Q905	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q906	8-729-209-15	TRANSISTOR	2SD2012	
Q907	8-729-209-15	TRANSISTOR	2SD2012	
Q908	8-729-209-15	TRANSISTOR	2SD2012	
Q911	8-729-900-80	TRANSISTOR	DTC114ES	
Q999	8-729-900-61	TRANSISTOR	DTA114ES	
Q8001	8-729-900-89	TRANSISTOR	DTC144ES	
Q9001	8-729-900-80	TRANSISTOR	DTC114ES	
Q9002	8-729-900-80	TRANSISTOR	DTC114ES	
Q9003	8-729-620-05	TRANSISTOR	2SC2603-EF	
		< RESISTOR >			
R1	1-249-411-11	CARBON	330	5%	1/4W
R2	1-249-411-11	CARBON	330	5%	1/4W
R3	1-247-891-00	CARBON	330K	5%	1/4W
R4	1-249-411-11	CARBON	330	5%	1/4W
R7	1-249-405-11	CARBON	100	5%	1/4W
R8	1-249-441-11	CARBON	100K	5%	1/4W
R9	1-249-437-11	CARBON	47K	5%	1/4W
R10	1-249-429-11	CARBON	10K	5%	1/4W
R11	1-249-421-11	CARBON	2.2K	5%	1/4W
R12	1-249-421-11	CARBON	2.2K	5%	1/4W
R13	1-249-433-11	CARBON	22K	5%	1/4W (H170:AEP,H700)
R14	1-249-432-11	CARBON	18K	5%	1/4W (H170:AEP,H700)
R15	1-247-903-00	CARBON	1M	5%	1/4W (H170:AEP,H700)
R20	1-249-425-11	CARBON	4.7K	5%	1/4W
R21	1-249-437-11	CARBON	47K	5%	1/4W (H170:E, EA, AUS, H170K)
R31	1-249-429-11	CARBON	10K	5%	1/4W
R32	1-249-429-11	CARBON	10K	5%	1/4W
R39	1-247-903-00	CARBON	1M	5%	1/4W (H170:E, EA, AUS, H170K)
R41	1-249-429-11	CARBON	10K	5%	1/4W
R48	1-249-429-11	CARBON	10K	5%	1/4W (H170:E, EA, AUS, H170K)
R49	1-249-437-11	CARBON	47K	5%	1/4W (H170:E, EA, AUS, H170K)
R50	1-249-417-11	CARBON	1K	5%	1/4W
R51	1-249-417-11	CARBON	1K	5%	1/4W
R52	1-249-417-11	CARBON	1K	5%	1/4W
R53	1-249-417-11	CARBON	1K	5%	1/4W
R54	1-249-417-11	CARBON	1K	5%	1/4W
R55	1-249-425-11	CARBON	4.7K	5%	1/4W
R56	1-249-405-11	CARBON	100	5%	1/4W
R57	1-249-401-11	CARBON	47	5%	1/4W
R58	1-249-423-11	CARBON	3.3K	5%	1/4W
R59	1-249-414-11	CARBON	560	5%	1/4W

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks
R60	1-249-417-11 CARBON	1K	5%	1/4W			R203	1-249-429-11 CARBON	10K	5%	1/4W		
R61	1-249-410-11 CARBON	270	5%	1/4W			R204	1-249-429-11 CARBON	10K	5%	1/4W	(H170K)
R62	1-249-425-11 CARBON	4.7K	5%	1/4W			R205	1-247-903-00 CARBON	1M	5%	1/4W	(H170K)
R63	1-249-421-11 CARBON	2.2K	5%	1/4W			R206	1-249-427-11 CARBON	6.8K	5%	1/4W		
R64	1-249-425-11 CARBON	4.7K	5%	1/4W			R209	1-247-903-00 CARBON	1M	5%	1/4W		
R65	1-249-425-11 CARBON	4.7K	5%	1/4W			R210	1-247-903-00 CARBON	1M	5%	1/4W		
R66	1-249-405-11 CARBON	100	5%	1/4W			R211	1-247-903-00 CARBON	1M	5%	1/4W		
R67	1-249-423-11 CARBON	3.3K	5%	1/4W			R212	1-247-903-00 CARBON	1M	5%	1/4W		
				(H170:AEP, H700)			R213	1-247-903-00 CARBON	1M	5%	1/4W		
R68	1-249-414-11 CARBON	560	5%	1/4W			R214	1-247-903-00 CARBON	1M	5%	1/4W		
				(H170:AEP, H700)									
R69	1-249-417-11 CARBON	1K	5%	1/4W			R215	1-249-423-11 CARBON	3.3K	5%	1/4W		
				(H170:AEP, H700)			R216	1-247-903-00 CARBON	1M	5%	1/4W		
R70	1-249-410-11 CARBON	270	5%	1/4W			R217	1-249-427-11 CARBON	6.8K	5%	1/4W		
				(H170:AEP, H700)			R221	1-249-441-11 CARBON	100K	5%	1/4W		
R71	1-249-433-11 CARBON	22K	5%	14W			R222	1-249-441-11 CARBON	100K	5%	1/4W		
				(H170:AEP, H700)									
R72	1-249-421-11 CARBON	2.2K	5%	1/4W			R227	1-247-887-00 CARBON	220K	5%	1/4W		
				(H170:AEP, H700)			R228	1-247-887-00 CARBON	220K	5%	1/4W		
R73	1-249-425-11 CARBON	4.7K	5%	1/4W			R233	1-249-441-11 CARBON	100K	5%	1/4W		
				(H170:AEP, H700)			R235	1-249-441-11 CARBON	100K	5%	1/4W		
R74	1-249-425-11 CARBON	4.7K	5%	1/4W			R236	1-249-417-11 CARBON	1K	5%	1/4W		
				(H170:AEP, H700)									
R81	1-249-433-11 CARBON	22K	5%	1/4W			R237	1-247-862-11 CARBON	20K	5%	1/4W		
R82	1-249-417-11 CARBON	1K	5%	1/4W			R240	1-249-433-11 CARBON	22K	5%	1/4W	(H170K)
R83	1-249-399-11 CARBON	33	5%	1/4W			R241	1-249-433-11 CARBON	22K	5%	1/4W		
R84	1-249-429-11 CARBON	10K	5%	1/4W			R242	1-249-417-11 CARBON	1K	5%	1/4W		
R85	1-249-429-11 CARBON	10K	5%	1/4W			R243	1-249-417-11 CARBON	1K	5%	1/4W		
R86	1-249-437-11 CARBON	47K	5%	1/4W			R244	1-247-816-11 CARBON	240	5%	1/4W		
R87	1-249-409-11 CARBON	220	5%	1/4W			R245	1-249-433-11 CARBON	22K	5%	1/4W		
R88	1-249-429-11 CARBON	10K	5%	1/4W			R246	1-247-903-00 CARBON	1M	5%	1/4W		
R89	1-249-429-11 CARBON	10K	5%	1/4W			R247	1-249-432-11 CARBON	18K	5%	1/4W		
R90	1-249-421-11 CARBON	2.2K	5%	1/4W			R248	1-249-437-11 CARBON	47K	5%	1/4W		
R91	1-249-421-11 CARBON	2.2K	5%	1/4W			R249	1-249-433-11 CARBON	22K	5%	1/4W	(H170K)
R92	1-247-891-00 CARBON	330K	5%	1/4W			R250	1-247-887-00 CARBON	220K	5%	1/4W		
R93	1-247-891-00 CARBON	330K	5%	1/4W			R251	1-249-429-11 CARBON	10K	5%	1/4W		
R94	1-249-420-11 CARBON	1.8K	5%	1/4W			R252	1-247-862-11 CARBON	20K	5%	1/4W		
R95	1-249-420-11 CARBON	1.8K	5%	1/4W			R253	1-249-429-11 CARBON	10K	5%	1/4W		
R96	1-249-425-11 CARBON	4.7K	5%	1/4W			R254	1-249-429-11 CARBON	10K	5%	1/4W	(H170K)
R97	1-249-425-11 CARBON	4.7K	5%	1/4W			R255	1-247-903-00 CARBON	1M	5%	1/4W	(H170K)
R98	1-249-404-00 CARBON	82	5%	1/4W			R256	1-249-427-11 CARBON	6.8K	5%	1/4W		
R99	1-249-417-11 CARBON	1K	5%	1/4W			R259	1-247-903-00 CARBON	1M	5%	1/4W		
R100	1-247-848-11 CARBON	5.1K	5%	1/4W			R260	1-247-903-00 CARBON	1M	5%	1/4W		
R102	1-249-430-11 CARBON	12K	5%	1/4W			R261	1-247-903-00 CARBON	1M	5%	1/4W		
R103	1-249-428-11 CARBON	8.2K	5%	1/4W			R262	1-247-903-00 CARBON	1M	5%	1/4W		
R104	1-249-435-11 CARBON	33K	5%	1/4W			R263	1-247-903-00 CARBON	1M	5%	1/4W		
R108	1-249-417-11 CARBON	1K	5%	1/4W			R264	1-247-903-00 CARBON	1M	5%	1/4W		
R142	1-249-417-11 CARBON	1K	5%	1/4W			R265	1-249-423-11 CARBON	3.3K	5%	1/4W		
R143	1-249-431-11 CARBON	15K	5%	1/4W			R266	1-247-903-00 CARBON	1M	5%	1/4W		
R144	1-249-393-11 CARBON	10	5%	1/4W			R267	1-249-427-11 CARBON	6.8K	5%	1/4W		
R200	1-247-887-00 CARBON	220K	5%	1/4W			R271	1-249-441-11 CARBON	100K	5%	1/4W		
R201	1-249-429-11 CARBON	10K	5%	1/4W			R272	1-249-441-11 CARBON	100K	5%	1/4W		
R202	1-247-862-11 CARBON	20K	5%	1/4W			R277	1-247-887-00 CARBON	220K	5%	1/4W		

MAIN (including POWER)

Ref. No.	Part No.	Description				Remarks
R278	1-247-887-00	CARBON	220K	5%	1/4W	
R283	1-249-441-11	CARBON	100K	5%	1/4W	
R285	1-249-441-11	CARBON	100K	5%	1/4W	
R287	1-247-862-11	CARBON	20K	5%	1/4W	
R290	1-249-437-11	CARBON	47K	5%	1/4W	
R294	1-249-442-11	CARBON	510	5%	1/4W	
R295	1-249-441-11	CARBON	100K	5%	1/4W (H170K)	
R296	1-249-441-11	CARBON	100K	5%	1/4W (H170K)	
R297	1-249-433-11	CARBON	22K	5%	1/4W	
R298	1-249-441-11	CARBON	100K	5%	1/4W	
R299	1-249-433-11	CARBON	22K	5%	1/4W (H170K)	
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-437-11	CARBON	47K	5%	1/4W	
R303	1-249-437-11	CARBON	47K	5%	1/4W (H170:AEP, H700)	
R304	1-247-897-11	CARBON	560K	5%	1/4W (H170:AEP, H700)	
R305	1-249-417-11	CARBON	1K	5%	1/4W (H170:AEP, H700)	
R306	1-249-417-11	CARBON	1K	5%	1/4W	
R307	1-249-437-11	CARBON	47K	5%	1/4W	
R308	1-249-417-11	CARBON	1K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-249-417-11	CARBON	1K	5%	1/4W	
R340	1-249-433-11	CARBON	22K	5%	1/4W	
R341	1-249-433-11	CARBON	22K	5%	1/4W	
R351	1-249-417-11	CARBON	1K	5%	1/4W	
R352	1-249-437-11	CARBON	47K	5%	1/4W	
R353	1-249-437-11	CARBON	47K	5%	1/4W (H170:AEP, H700)	
R354	1-247-897-11	CARBON	560K	5%	1/4W (H170:AEP, H700)	
R355	1-249-417-11	CARBON	1K	5%	1/4W (H170:AEP, H700)	
R356	1-249-417-11	CARBON	1K	5%	1/4W	
R357	1-249-437-11	CARBON	47K	5%	1/4W	
R358	1-249-417-11	CARBON	1K	5%	1/4W	
R359	1-249-417-11	CARBON	1K	5%	1/4W	
R360	1-249-417-11	CARBON	1K	5%	1/4W	
R407	1-247-887-00	CARBON	220K	5%	1/4W	
R457	1-247-887-00	CARBON	220K	5%	1/4W	
R486	1-249-413-11	CARBON	470	5%	1/4W	
R801	1-249-417-11	CARBON	1K	5%	1/4W	
R802	1-249-438-11	CARBON	56K	5%	1/4W	
R803	1-249-413-11	CARBON	470	5%	1/4W	
R804	1-249-438-11	CARBON	56K	5%	1/4W	
R851	1-249-417-11	CARBON	1K	5%	1/4W	
R852	1-249-438-11	CARBON	56K	5%	1/4W	
R853	1-249-413-11	CARBON	470	5%	1/4W	
R854	1-249-438-11	CARBON	56K	5%	1/4W	
R871	1-249-429-11	CARBON	10K	5%	1/4W	
R872	1-249-437-11	CARBON	47K	5%	1/4W	
R873	1-249-429-11	CARBON	10K	5%	1/4W	
R874	1-247-883-00	CARBON	150K	5%	1/4W	
R875	1-249-421-11	CARBON	2.2K	5%	1/4W	
R876	1-249-421-11	CARBON	2.2K	5%	1/4W	
△R877	1-212-881-11	FUSIBLE	100	5%	1/4W F	
R878	1-249-417-11	CARBON	1K	5%	1/4W	
R879	1-249-417-11	CARBON	1K	5%	1/4W	
△R880	1-212-881-11	FUSIBLE	100	5%	1/4W F	
R881	1-249-421-11	CARBON	2.2K	5%	1/4W	
R882	1-249-421-11	CARBON	2.2K	5%	1/4W	
△R883	1-212-881-11	FUSIBLE	100	5%	1/4W F	
△R889	1-212-849-00	FUSIBLE	4.7	5%	1/4W F	
R891	1-249-389-11	CARBON	4.7	5%	1/4W	
R892	1-249-389-11	CARBON	4.7	5%	1/4W	
△R900	1-212-934-00	FUSIBLE	1	5%	1/2W F	
△R901	1-212-950-00	FUSIBLE	4.7	5%	1/2W F	
△R902	1-219-108-11	FUSIBLE	1.5	5%	1W F	
R903	1-247-903-00	CARBON	1M	5%	1/4W	
R904	1-249-405-11	CARBON	100	5%	1/4W	
R905	1-249-432-11	CARBON	18K	5%	1/4W	
R906	1-247-842-11	CARBON	3K	5%	1/4W	
R907	1-249-431-11	CARBON	15K	5%	1/4W	
R908	1-247-854-11	CARBON	9.1K	5%	1/4W	
△R909	1-219-153-11	FUSIBLE	10	5%	1/4W F	
R910	1-249-417-11	CARBON	1K	5%	1/4W	
R911	1-249-417-11	CARBON	1K	5%	1/4W	
△R913	1-212-942-00	FUSIBLE	2.2	5%	1/2W F	
R914	1-249-423-11	CARBON	3.3K	5%	1/4W	
R921	1-249-429-11	CARBON	10K	5%	1/4W	
R922	1-249-441-11	CARBON	100K	5%	1/4W	
R923	1-249-429-11	CARBON	10K	5%	1/4W	
△R924	1-217-637-00	FUSIBLE	1	5%	1/4W F	
R927	1-249-417-11	CARBON	1K	5%	1/4W	
R928	1-249-417-11	CARBON	1K	5%	1/4W	
R952	1-247-903-00	CARBON	1M	5%	1/4W	
R953	1-247-903-00	CARBON	1M	5%	1/4W	
R954	1-247-903-00	CARBON	1M	5%	1/4W	
R955	1-249-429-11	CARBON	10K	5%	1/4W	
△R999	9-910-999-33	FUSIBLE	0.22	5%	1/4W F	
R2001	1-249-441-11	CARBON	100K	5%	1/4W (H170, H700)	
R2002	1-249-421-11	CARBON	2.2K	5%	1/4W	
R2003	1-249-433-11	CARBON	22K	5%	1/4W	
R2004	1-249-433-11	CARBON	22K	5%	1/4W	
R2052	1-249-421-11	CARBON	2.2K	5%	1/4W	
R8001	1-249-417-11	CARBON	1K	5%	1/4W	
R9001	1-249-429-11	CARBON	10K	5%	1/4W	
R9002	1-249-429-11	CARBON	10K	5%	1/4W	
R9003	1-249-429-11	CARBON	10K	5%	1/4W	
R9004	1-249-429-11	CARBON	10K	5%	1/4W	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
		< VARIABLE RESISTOR >	
RV81	1-238-601-11	RES, ADJ, CARBON 22K	
RV82	1-238-601-11	RES, ADJ, CARBON 22K	
RV406	1-241-877-11	RES, VAR, CARBON 100K X2(VOLUME)	
		< COIL >	
T1	1-402-424-11	COIL (ANT, SW3) (H170:E, EA, AUS, H170K)	
T2	1-406-346-11	COIL (OSC, SW3) (H170:E, EA, AUS, H170K)	
		< TERMINAL >	
* TB1	1-537-138-31	TERMINAL BOARD (ANT) (H170:AEP, H700)	
TB1	1-537-238-21	TERMINAL BOARD (H170:E, EA, AUS, H170K)	
* TB2	4-925-530-01	PLATE, GROUND (H170, H170K)	
* TB3	4-942-204-01	PLATE, GROUND	
TM301	1-537-238-11	TERMINAL BOARD (SPEAKER)	
		< TEST PIN >	
* TP81	1-568-449-11	HOUSING, CONNECTOR(PC BOARD)3P	
		< VIBRATOR >	
X51	1-577-126-11	VIBRATOR, CRYSTAL 7.2MHz	
X81	1-577-075-11	OSCILLATOR, CERAMIC 456kHz	

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*	A-2006-399-A	MD-A BOARD (RA13A)	
		**********	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C12	1-136-157-00	FILM 0.022uF 5% 50V	
C13	1-124-234-00	ELECT 22uF 20% 16V	
C18	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C21	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C22	1-136-157-00	FILM 0.022uF 5% 50V	
C23	1-124-234-00	ELECT 22uF 20% 16V	
C28	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C31	1-124-234-00	ELECT 22uF 20% 16V	
C32	1-124-234-00	ELECT 22uF 20% 16V	
C71	1-124-499-11	ELECT, NONPOLAR R 1uF 20% 50V	
		< JACK >	
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD	
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P	
		< CONNECTOR >	
* CNP32	1-580-772-11	PIN, CONNECTOR (PC BOARD) 4P	
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	

Ref. No.	Part No.	Description	Remarks
		< IC >	
IC31A	8-759-106-02	IC uPC4570G2	
		< JUMPER RESISTOR >	
JW1	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW51	1-216-296-00	METAL CHIP 0 5% 1/8W	
JW52	1-216-296-00	METAL CHIP 0 5% 1/8W	
JW53	1-216-296-00	METAL CHIP 0 5% 1/8W	
JW54	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< TRANSISTOR >	
Q71A	8-729-602-36	TRANSISTOR 2SA1602	
		< RESISTOR >	
R11	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R12	1-216-025-00	METAL CHIP 100 5% 1/10W	
R13	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R14	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R21	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R22	1-216-025-00	METAL CHIP 100 5% 1/10W	
R23	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R24	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R31	1-216-033-00	METAL CHIP 220 5% 1/10W	
R32	1-216-033-00	METAL CHIP 220 5% 1/10W	
R71	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R72	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R73	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R74	1-216-089-00	METAL CHIP 47K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV11A	1-238-012-11	RES, ADJ, CARBON 1K	
RV21A	1-238-012-11	RES, ADJ, CARBON 1K	
RV71A	1-238-016-11	RES, ADJ, CARBON 10K	
RV72A	1-238-016-11	RES, ADJ, CARBON 10K	

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	A-2006-400-A	MD-B BOARD (RB22A)	
		**********	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C12	1-136-157-00	FILM 0.022uF 5% 50V	
C13	1-124-234-00	ELECT 22uF 20% 16V	
C14	1-136-273-91	FILM 75PF 5% 630V	
C15	1-164-080-11	CERAMIC 390PF 10% 50V	
C17	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	
C18	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C21	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C22	1-136-157-00	FILM 0.022uF 5% 50V	
C23	1-124-234-00	ELECT 22uF 20% 16V	

Ref. No.	Part No.	Description				Remarks
C24	1-136-273-91	FILM	75PF	5%	630V	
C25	1-164-080-11	CERAMIC	390PF	10%	50V	
C27	1-163-103-00	CERAMIC CHIP	27PF	5%	50V	
C28	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C31	1-124-234-00	ELECT	22uF	20%	16V	
C32	1-124-234-00	ELECT	22uF	20%	16V	
C33	1-124-234-00	ELECT	22uF	20%	16V	
C51	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	
C52	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	
C53	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V	
C54	1-136-559-11	FILM	0.0047uF	5%	630V	
C56	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C57	1-164-346-11	CERAMIC CHIP	1uF		16V	
C58	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V	
C71	1-124-499-11	ELECT, NONPOLAR N 1uF		20%	50V	

< JACK >

Ref. No.	Part No.	Description
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD
* CNJ33	1-580-782-11	CONNECTOR, BOARD TO BOARD
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P

< CONNECTOR >

Ref. No.	Part No.	Description
* CNP32	1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P

< DIODE >

Ref. No.	Part No.	Description	
D31	8-719-016-74	DIODE	1SS352

< IC >

Ref. No.	Part No.	Description	
IC31B	8-759-106-02	IC	uPC4570G2

< JUMPER RESISTOR >

Ref. No.	Part No.	Description			
JW1	1-216-296-00	METAL CHIP	0	5%	1/8W
JW2	1-216-295-00	METAL CHIP	0	5%	1/10W
JW3	1-216-295-00	METAL CHIP	0	5%	1/10W
JW4	1-216-295-00	METAL CHIP	0	5%	1/10W
JW5	1-216-295-00	METAL CHIP	0	5%	1/10W
JW6	1-216-295-00	METAL CHIP	0	5%	1/10W
JW7	1-216-295-00	METAL CHIP	0	5%	1/10W
JW52	1-216-296-00	METAL CHIP	0	5%	1/8W
JW53	1-216-296-00	METAL CHIP	0	5%	1/8W
JW54	1-216-296-00	METAL CHIP	0	5%	1/8W
JW55	1-216-296-00	METAL CHIP	0	5%	1/8W
JW56	1-216-296-00	METAL CHIP	0	5%	1/8W
JW57	1-216-296-00	METAL CHIP	0	5%	1/8W
JW58	1-216-296-00	METAL CHIP	0	5%	1/8W
JW59	1-216-296-00	METAL CHIP	0	5%	1/8W
JW60	1-216-296-00	METAL CHIP	0	5%	1/8W
JW61	1-216-296-00	METAL CHIP	0	5%	1/8W

< COIL >

Ref. No.	Part No.	Description		Remarks
L11	1-410-780-11	INDUCTOR	27mH	
L21	1-410-780-11	INDUCTOR	27mH	

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q51	8-729-808-01	TRANSISTOR	2SD1622-S
Q52	8-729-808-01	TRANSISTOR	2SD1622-S
Q53	8-729-808-01	TRANSISTOR	2SD1622-S
Q71B	8-729-602-36	TRANSISTOR	2SA1602

< RESISTOR >

Ref. No.	Part No.	Description			
R11	1-216-099-00	METAL CHIP	120K	5%	1/10W
R12	1-216-025-00	METAL CHIP	100	5%	1/10W
R13	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R14	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R15	1-249-430-11	CARBON	12K	5%	1/4W
R21	1-216-099-00	METAL CHIP	120K	5%	1/10W
R22	1-216-025-00	METAL CHIP	100	5%	1/10W
R23	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R24	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R25	1-249-430-11	CARBON	12K	5%	1/4W
R31	1-216-033-00	METAL CHIP	220	5%	1/10W
R32	1-216-033-00	METAL CHIP	220	5%	1/10W
R41	1-249-393-11	CARBON	10	5%	1/4W
R42	1-249-393-11	CARBON	10	5%	1/4W
R51	1-216-075-00	METAL CHIP	12K	5%	1/10W
R52	1-216-075-00	METAL CHIP	12K	5%	1/10W
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W
R54	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R55	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R56	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R71	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W
R73	1-216-089-00	METAL CHIP	47K	5%	1/10W
R74	1-216-089-00	METAL CHIP	47K	5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV11B	1-238-012-11	RES, ADJ, CARBON 1K
RV12	1-238-551-11	RES, ADJ, CARBON 220K
RV21B	1-238-012-11	RES, ADJ, CARBON 1K
RV22	1-238-551-11	RES, ADJ, CARBON 220K
RV71B	1-238-016-11	RES, ADJ, CARBON 10K
RV72B	1-238-016-11	RES, ADJ, CARBON 10K

< RELAY >

Ref. No.	Part No.	Description
RY31	1-515-726-11	RELAY

< TRANSFORMER >

Ref. No.	Part No.	Description
T51	1-406-419-11	COIL, BIAS OSCILLATION

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Ref. No.	Part No.	Description				Remarks
*	A-4343-549-A	SUB BOARD, COMPLETE (H170:E,EA)				
		******************************				
*	A-4343-550-A	SUB BOARD, COMPLETE (H170:AEP,H700)				
		********************************				
*	A-4343-552-A	SUB BOARD, COMPLETE (H170K)				
		*****************************				
*	A-4343-573-A	SUB BOARD, COMPLETE (H170:AUS)				
		******************************				
*	1-705-409-11	SUB COMBINED BOARD				

< CAPACITOR >

Ref. No.	Part No.	Description				Remarks
C201	1-163-986-00	CERAMIC CHIP	0.027uF	10%	25V	
C202	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C203	1-124-254-00	ELECT	0.68uF	20%	50V	
C204	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C205	1-124-257-00	ELECT	2.2uF	20%	50V	
C206	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C207	1-126-157-11	ELECT	10uF	20%	16V	
C208	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C209	1-124-257-00	ELECT	2.2uF	20%	50V	
C301	1-163-986-00	CERAMIC CHIP	0.027uF	10%	25V	
C302	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C303	1-124-254-00	ELECT	0.68uF	20%	50V	
C304	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C305	1-124-257-00	ELECT	2.2uF	20%	50V	
C306	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C307	1-126-157-11	ELECT	10uF	20%	16V	
C308	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C309	1-124-257-00	ELECT	2.2uF	20%	50V	
C401	1-126-933-11	ELECT	100uF	20%	16V	
C402	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C403	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C404	1-124-443-00	ELECT	100uF	20%	10V	
C405	1-124-443-00	ELECT	100uF	20%	10V	
C407	1-124-257-00	ELECT	2.2uF	20%	50V	
C408	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C409	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C410	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C411	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V	
C412	1-124-903-11	ELECT	1uF	20%	50V	
C413	1-124-443-00	ELECT	100uF	20%	10V	
C414	1-124-443-00	ELECT	100uF	20%	10V	
C415	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C416	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C417	1-124-482-11	ELECT	33uF	20%	35V	
C419	1-126-926-11	ELECT	1000uF	20%	10V	
C420	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C421	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C422	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C424	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C425	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C426	1-124-478-11	ELECT	100uF	20%	25V	
C427	1-124-478-11	ELECT	100uF	20%	25V	
C428	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V	
C429	1-126-926-11	ELECT	1000uF	20%	10V	
C603	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(H170K)
C604	1-126-101-11	ELECT	100uF	20%	16V	(H170K)
C605	1-126-101-11	ELECT	100uF	20%	16V	(H170K)
C606	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(H170K)
C607	1-124-589-11	ELECT	47uF	20%	16V	(H170K)
C608	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	(H170K)
C609	1-124-611-00	ELECT	1uF	20%	50V	(H170K)
C610	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V	(H170K)
C611	1-124-903-11	ELECT	1uF	20%	50V	(H170K)
C612	1-164-232-11	CERAMIC CHIP	0.01uF		50V	(H170K)
C613	1-163-010-11	CERAMIC CHIP	0.0012uF	10%	50V	(H170K)
C614	1-124-903-11	ELECT	1uF	20%	50V	(H170K)
C615	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V	(H170K)
C617	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(H170K)
C618	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(H170K)
C619	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(H170K)
C620	1-164-232-11	CERAMIC CHIP	0.01uF		50V	(H170K)
C621	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	(H170K)
C622	1-164-232-11	CERAMIC CHIP	0.01uF		50V	(H170K)
C623	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C624	1-124-903-11	ELECT	1uF	20%	50V	
C625	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C626	1-124-903-11	ELECT	1uF	20%	50V	
C627	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	(H170K)
C628	1-124-903-11	ELECT	1uF	20%	50V	(H170K)
C629	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	(H170K)
C630	1-124-903-11	ELECT	1uF	20%	50V	(H170K)
C631	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C632	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C633	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	
C636	1-126-157-11	ELECT	10uF	20%	16V	
C637	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C638	1-126-101-11	ELECT	100uF	20%	16V	
C639	1-126-157-11	ELECT	10uF	20%	16V	
C640	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C641	1-164-232-11	CERAMIC CHIP	0.01uF		50V	(H170K)
C681	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C682	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C683	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	
C686	1-126-157-11	ELECT	10uF	20%	16V	
C687	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C689	1-126-157-11	ELECT	10uF	20%	16V	
C691	1-124-604-00	ELECT	330uF	20%	10V	
C692	1-124-604-00	ELECT	330uF	20%	10V	
C4001	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C4002	1-164-232-11	CERAMIC CHIP	0.01uF		50V	

SUB (including POWER TRANSFORMER/VOLUME/MIC HP/SW)

Ref. No.	Part No.	Description		Remarks
C4003	1-164-005-11	CERAMIC CHIP 0.47uF	25V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN402	1-573-101-11	SOCKET, CONNECTOR 9P	
CN403	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN404	1-573-101-11	SOCKET, CONNECTOR 9P	
CN405	1-580-783-11	CONNECTOR, BOARD TO BOARD	
CN406	1-580-783-11	CONNECTOR, BOARD TO BOARD	
* CN407	1-566-970-11	HOUSING, CONNECTOR(PC BOARD)8P	
* CN408	1-566-970-11	HOUSING, CONNECTOR(PC BOARD)8P	
CN410	1-695-068-11	CONNECTOR, FFC/FPC 15P	
* CN601	1-568-454-11	PIN, CONNECTOR (PC BOARD) 9P	
* CN602	1-573-100-11	SOCKET, CONNECTOR 4P	
* CN851	1-564-321-00	PIN, CONNECTOR 2P	
* CN852	1-569-508-11	PIN, CONNECTOR 8P	
* CN1501	1-691-894-11	CONNECTOR, FFC/FPC 15P	

< DIODE >

Ref. No.	Part No.	Description	
D401	8-719-210-33	DIODE	EC10DS2
D403	8-719-801-78	DIODE	1SS184
D404	8-719-021-41	DIODE	UZM5.6X
D405	8-719-021-77	DIODE	UZM8.2Z
D407	8-719-801-78	DIODE	1SS184
D410	8-719-801-78	DIODE	1SS184
D411	8-719-801-78	DIODE	1SS184
D412	8-719-801-78	DIODE	1SS184
D414	8-719-210-33	DIODE	EC10DS2
D416	8-719-801-78	DIODE	1SS184
D601	8-719-303-65	DIODE	SEL4510-D (H170K)
D602	8-719-303-65	DIODE	SEL4510-D (H170K)
D810	8-719-312-09	DIODE	RBA-402
D1501	8-719-026-66	DIODE	SML1460E
D1502	8-719-026-66	DIODE	SML1460E
D1503	8-719-026-64	DIODE	SML1260S
D1504	8-719-026-64	DIODE	SML1260S
D1506	8-719-026-64	DIODE	SML1260S
D1507	8-719-026-66	DIODE	SML1460E
D1508	8-719-026-66	DIODE	SML1460E
D1509	8-719-026-68	DIODE	SML1960A
D4001	8-719-801-78	DIODE	1SS184

< IC >

Ref. No.	Part No.	Description	
IC201	8-759-516-43	IC	CD4053BCM
IC202	8-752-050-13	IC	CXA1101M
IC203	8-759-996-43	IC	RC4558PS
IC204	8-759-516-47	IC	CD4066BCM
IC205	8-752-055-60	IC	CXA1578M
IC401	8-759-061-36	IC	M50964-302
IC402	8-759-207-05	IC	TA7272P
IC403	8-759-996-43	IC	RC4558PS
IC404	8-759-916-25	IC	SN74HC32AN
IC405	8-759-520-90	IC	PST572E
IC601	8-759-636-22	IC	M50197FP (H170K)
IC602	8-759-636-55	IC	M5218AFP

< JACK >

Ref. No.	Part No.	Description	
J601	1-562-837-21	JACK (HEADPHONES)	
J602	1-562-837-21	JACK (MIC1)	
J603	1-562-837-21	JACK (MIC2)(H170K)	

< COIL >

Ref. No.	Part No.	Description	
L403	1-410-482-31	INDUCTOR	100uH
L404	1-410-482-31	INDUCTOR	100uH

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q201	8-729-900-80	TRANSISTOR	DTC114ES
Q202	8-729-620-05	TRANSISTOR	2SC2603-EF
Q301	8-729-900-80	TRANSISTOR	DTC114ES
Q302	8-729-620-05	TRANSISTOR	2SC2603-EF
Q401	8-729-804-41	TRANSISTOR	2SB1122-S
Q402	8-729-804-41	TRANSISTOR	2SB1122-S
Q403	8-729-900-61	TRANSISTOR	DTA114ES
Q404	8-729-900-80	TRANSISTOR	DTC114ES
Q405	8-729-900-61	TRANSISTOR	DTA114ES
Q406	8-729-900-61	TRANSISTOR	DTA114ES
Q407	8-729-900-61	TRANSISTOR	DTA114ES
Q408	8-729-900-80	TRANSISTOR	DTC114ES
Q409	8-729-900-65	TRANSISTOR	DTA144ES
Q410	8-729-900-65	TRANSISTOR	DTA144ES
Q411	8-729-900-80	TRANSISTOR	DTC114ES
Q412	8-729-900-61	TRANSISTOR	DTA114ES
Q413	8-729-900-80	TRANSISTOR	DTC114ES
Q414	8-729-900-80	TRANSISTOR	DTC114ES
Q415	8-729-900-61	TRANSISTOR	DTA114ES
Q602	8-729-620-05	TRANSISTOR	2SC2603-EF
Q603	8-729-620-05	TRANSISTOR	2SC2603-EF (H170K)

< RESISTOR >

Ref. No.	Part No.	Description			
R201	1-216-089-00	METAL CHIP	47K	5%	1/10W
R202	1-216-089-00	METAL CHIP	47K	5%	1/10W
R203	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R204	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R205	1-216-105-00	METAL CHIP	220K	5%	1/10W
R206	1-216-025-00	METAL CHIP	100	5%	1/10W
R207	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R208	1-216-105-00	METAL CHIP	220K	5%	1/10W
R209	1-216-097-00	METAL CHIP	100K	5%	1/10W
R210	1-216-066-00	METAL CHIP	5.1K	5%	1/10W

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks
R211	1-216-025-00	METAL CHIP	100	5%	1/10W		R431	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R432	1-216-090-00	METAL CHIP	51K	5%	1/10W	
R213	1-216-081-00	METAL CHIP	22K	5%	1/10W		R433	1-216-025-00	METAL CHIP	100	5%	1/10W	
R214	1-216-089-00	METAL CHIP	47K	5%	1/10W		R434	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R215	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R435	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R301	1-216-089-00	METAL CHIP	47K	5%	1/10W		R436	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R302	1-216-089-00	METAL CHIP	47K	5%	1/10W		R437	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R303	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R438	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R304	1-216-063-00	METAL CHIP	3.9K	5%	1/10W		R440	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R305	1-216-105-00	METAL CHIP	220K	5%	1/10W		R441	1-216-041-00	METAL CHIP	470	5%	1/10W	
R306	1-216-025-00	METAL CHIP	100	5%	1/10W		R444	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R307	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R445	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R308	1-216-105-00	METAL CHIP	220K	5%	1/10W		R446	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R309	1-216-097-00	METAL CHIP	100K	5%	1/10W		R447	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R310	1-216-066-00	METAL CHIP	5.1K	5%	1/10W		R448	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R311	1-216-025-00	METAL CHIP	100	5%	1/10W		R449	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R312	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R450	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R313	1-216-081-00	METAL CHIP	22K	5%	1/10W		R451	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R314	1-216-089-00	METAL CHIP	47K	5%	1/10W		R452	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R315	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R453	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R401	1-216-037-00	METAL CHIP	330	5%	1/10W		R454	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R402	1-216-037-00	METAL CHIP	330	5%	1/10W		R455	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R403	1-216-037-00	METAL CHIP	330	5%	1/10W		R456	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R404	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R457	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R405	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		R458	1-216-088-00	METAL CHIP	43K	5%	1/10W	
R406	1-216-113-00	METAL CHIP	470K	5%	1/10W		R459	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R407	1-216-113-00	METAL CHIP	470K	5%	1/10W		R460	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R408	1-216-073-00	METAL CHIP	10K	5%	1/10W		R461	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R409	1-216-073-00	METAL CHIP	10K	5%	1/10W		R462	1-216-082-00	METAL GLAZE	24K	5%	1/10W	
R410	1-216-045-00	METAL CHIP	680	5%	1/10W		R463	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R411	1-216-037-00	METAL CHIP	330	5%	1/10W		R464	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R412	1-216-073-00	METAL CHIP	10K	5%	1/10W		R466	1-216-025-00	METAL CHIP	100	5%	1/10W	
R413	1-216-045-00	METAL CHIP	680	5%	1/10W		R467	1-216-025-00	METAL CHIP	100	5%	1/10W	
R414	1-216-073-00	METAL CHIP	10K	5%	1/10W		R470	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R415	1-216-083-00	METAL CHIP	27K	5%	1/10W		R471	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R416	1-216-073-00	METAL CHIP	10K	5%	1/10W		R472	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R417	1-216-083-00	METAL CHIP	27K	5%	1/10W		R473	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R418	1-216-085-00	METAL CHIP	33K	5%	1/10W		R474	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R419	1-216-084-00	METAL CHIP	30K	5%	1/10W		R475	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R420	1-216-089-00	METAL CHIP	47K	5%	1/10W		R601	1-216-073-00	METAL CHIP	10K	5%	1/10W(H170K)	
R421	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R602	1-216-077-00	METAL CHIP	15K	5%	1/10W(H170K)	
R422	1-216-090-00	METAL CHIP	51K	5%	1/10W		R603	1-216-077-00	METAL CHIP	15K	5%	1/10W(H170K)	
R423	1-216-080-00	METAL CHIP	20K	5%	1/10W		R604	1-216-083-00	METAL CHIP	27K	5%	1/10W(H170K)	
R424	1-216-090-00	METAL CHIP	51K	5%	1/10W		R605	1-216-060-00	METAL GLAZE	3K	5%	1/10W(H170K)	
R425	1-216-025-00	METAL CHIP	100	5%	1/10W		R606	1-216-059-00	METAL CHIP	2.7K	5%	1/10W(H170K)	
R426	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		R607	1-216-077-00	METAL CHIP	15K	5%	1/10W(H170K)	
R427	1-216-085-00	METAL CHIP	33K	5%	1/10W		R608	1-216-077-00	METAL CHIP	15K	5%	1/10W(H170K)	
R428	1-216-089-00	METAL CHIP	47K	5%	1/10W		R609	1-216-073-00	METAL CHIP	10K	5%	1/10W(H170K)	
R429	1-216-090-00	METAL CHIP	51K	5%	1/10W		R610	1-216-070-00	METAL CHIP	7.5K	5%	1/10W(H170K)	
R430	1-216-084-00	METAL CHIP	30K	5%	1/10W		R611	1-216-094-00	METAL GLAZE	75K	5%	1/10W(H170K)	

SUB (including POWER TRANSFORMER/VOLUME/MIC HP/SW)

Ref. No.	Part No.	Description				Remarks
R612	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	(H170K)
R613	1-216-094-00	METAL GLAZE	75K	5%	1/10W	(H170K)
R616	1-216-045-00	METAL CHIP	680	5%	1/10W	
R617	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R618	1-216-060-00	METAL GLAZE	3K	5%	1/10W	
R619	1-216-025-00	METAL CHIP	100	5%	1/10W	
R620	1-216-045-00	METAL CHIP	680	5%	1/10W	(H170K)
R621	1-216-121-00	METAL CHIP	1M	5%	1/10W	(H170K)
R622	1-216-060-00	METAL GLAZE	3K	5%	1/10W	(H170K)
R623	1-216-025-00	METAL CHIP	100	5%	1/10W	(H170K)
R624	1-216-121-00	METAL CHIP	1M	5%	1/10W	(H170K)
R626	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R627	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R628	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R629	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R630	1-216-017-00	METAL CHIP	47	5%	1/10W	
R632	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R633	1-216-097-00	METAL CHIP	100K	5%	1/10W	(H170K)
R634	1-216-035-00	METAL CHIP	270	5%	1/10W	
R635	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R636	1-216-089-00	METAL CHIP	47K	5%	1/10W	(H170K)
R676	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R677	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R678	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R679	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R687	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R688	1-216-017-00	METAL CHIP	47	5%	1/10W	
△R831	1-219-119-11	FUSIBLE	0.1	5%	1/4W F	
△R881	1-219-119-11	FUSIBLE	0.1	5%	1/4W F	
R1028	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R1501	1-216-041-00	METAL CHIP	470	5%	1/10W	
R1502	1-216-045-00	METAL CHIP	680	5%	1/10W	
R1503	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1504	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R1505	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R1506	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R1507	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R1508	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R1509	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R1510	1-216-029-00	METAL CHIP	150	5%	1/10W	
R1511	1-216-033-00	METAL CHIP	220	5%	1/10W	
R1512	1-216-037-00	METAL CHIP	330	5%	1/10W	
R1513	1-216-041-00	METAL CHIP	470	5%	1/10W	
R1514	1-216-045-00	METAL CHIP	680	5%	1/10W	
R1515	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1517	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R1518	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R1519	1-216-029-00	METAL CHIP	150	5%	1/10W	
R1520	1-216-033-00	METAL CHIP	220	5%	1/10W	
R1521	1-216-037-00	METAL CHIP	330	5%	1/10W	
R1522	1-216-041-00	METAL CHIP	470	5%	1/10W	
R1523	1-216-045-00	METAL CHIP	680	5%	1/10W	
R1524	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R1525	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R1526	1-216-029-00	METAL CHIP	150	5%	1/10W	
R1527	1-216-029-00	METAL CHIP	150	5%	1/10W	
R2001	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R4000	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R4001	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4002	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4003	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4004	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4005	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4006	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4007	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R4008	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
△R4009	1-212-849-00	FUSIBLE	4.7	5%	1/4W F	
△R4010	1-212-849-00	FUSIBLE	4.7	5%	1/4W F	
R4099	1-249-390-11	CARBON	5.6	5%	1/6W	
R4421	1-216-049-00	METAL CHIP	1K	5%	1/10W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV201	1-241-136-11	RES, ADJ, CARBON 10K
RV301	1-241-136-11	RES, ADJ, CARBON 10K

< SWITCH >

Ref. No.	Part No.	Description
S1022	1-572-184-11	SWITCH, KEYBOARD (CONTINUE)
S1501	1-572-184-11	SWITCH, KEYBOARD (▲)
S1502	1-572-184-11	SWITCH, KEYBOARD (►ΙΙ)
S1503	1-572-184-11	SWITCH, KEYBOARD (■)
S1504	1-572-184-11	SWITCH, KEYBOARD (►►)
S1505	1-572-184-11	SWITCH, KEYBOARD (◄◄)
S1506	1-572-184-11	SWITCH, KEYBOARD (REPEAT)
S1507	1-572-184-11	SWITCH, KEYBOARD (PROGRAM)
S1508	1-572-184-11	SWITCH, KEYBOARD (SHUFFLE)
S1509	1-572-184-11	SWITCH, KEYBOARD (EDIT/TIME/FADE)
S1510	1-572-184-11	SWITCH, KEYBOARD (CHECK)
S1511	1-572-184-11	SWITCH, KEYBOARD (■)
S1512	1-572-184-11	SWITCH, KEYBOARD (PAUSE)
S1513	1-572-184-11	SWITCH, KEYBOARD (▷)
S1514	1-572-184-11	SWITCH, KEYBOARD (◁)
S1516	1-572-184-11	SWITCH, KEYBOARD (◄◄)
S1517	1-572-184-11	SWITCH, KEYBOARD (►►)
S1518	1-572-184-11	SWITCH, KEYBOARD (■)
S1519	1-572-184-11	SWITCH, KEYBOARD (▷)
S1520	1-572-184-11	SWITCH, KEYBOARD (◁)
S1521	1-572-184-11	SWITCH, KEYBOARD (◄◄)
S1522	1-572-184-11	SWITCH, KEYBOARD (►►)
S1523	1-572-184-11	SWITCH, KEYBOARD (REC)
S1524	1-572-184-11	SWITCH, KEYBOARD (HIGH SPEED)
S1525	1-572-184-11	SWITCH, KEYBOARD (CD SYNC)

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

SUB (including POWER TRANSFORMER/VOLUME/MIC HP/SW)

Ref. No.	Part No.	Description	Remarks
S1526	1-570-837-11	SWITCH, SLIDE (DIRECTION MODE)	
S1527	1-570-849-11	SWITCH, SLIDE (DOLBY NR)	
△VS801	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (H170:E, EA, H170K)	

< TEST PIN >

∗ TP101	1-564-517-11	PLUG, CONNECTOR 2P	
∗ TP201	1-564-518-11	PLUG, CONNECTOR 3P	
∗ TP401	1-564-518-11	PLUG, CONNECTOR 3P	

< VIBRATOR >

X401	1-567-819-11	VIBRATOR, CERAMIC 4MHz	
X601	1-567-819-11	VIBRATOR, CERAMIC 4MHz (H170K)	

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MISCELLANEOUS
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Ref. No.	Part No.	Description	Remarks
△T101	1-450-769-11	TRANSFORMER, POWER (H170:AEP, H700)	
△T101	1-450-770-11	TRANSFORMER, POWER (H170:E, EA, AUS, H170K)	
55	1-696-146-11	WIRE (FLAT TYPE) (16 CORE)	
58	1-690-996-11	WIRE (FLAT TYPE) (4 CORE)	
∗ 59	1-590-240-11	WIRE, FLAT TYPE (9 CORE)	
60	1-690-997-11	CABLE, FLAT (11 CORE)	
61	1-690-588-31	WIRE, FLAT TYPE (9 CORE)	
△64	1-574-804-11	CORD, POWER (H700:UK)	
△64	1-574-805-11	CORD, POWER (H170:AEP, EA/H170K:EA/H700)	
△64	1-574-902-11	CORD, POWER (H170:E/H170K:E)	
△64	1-690-056-11	CORD, POWER (H170:AUS)	
167	1-638-983-11	PC BOARD, MOTOR FLEXIBLE	
253	1-590-530-11	WIRE, FLAT TYPE	
264	1-690-853-11	WIRE (FLAT TYPE) (19 CORE)	
△305	8-848-144-11	DEVICE, OPTICAL KSS-240A	
307	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
ANT1	1-501-321-61	ANTENNA, TELESCOPIC (H170, H170K)	
△F801	1-532-078-00	FUSE (1A) (H700, H170:AEP, AUS)	
△F801	1-532-203-00	FUSE (2A) (H170:E, EA, H170K)	
△F802	1-532-078-00	FUSE (1A) (H170, H170K:E, EA)	
HP101	A-2003-868-A	BASE ASSY, HEAD	
HRP101	A-2003-838-A	BASE ASSY, HEAD	
M101	X-4917-504-1	MOTOR ASSY (SLED)	
M101A	X-3363-501-1	MOTOR ASSY, REEL (DECK A)	
M101B	X-3363-501-1	MOTOR ASSY, REEL (DECK B)	
M102	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102A	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY (DECK A)	
M102B	X-3359-417-1	MOTOR (CAPSTAN MOTOR) ASSY (DECK B)	
M251	A-4608-362-A	MOTOR (L) ASSY	

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ACCESSORIES & PACKING MATERIALS
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	1-501-369-11	ANTENNA (H700:UK)
	1-501-374-11	ANTENNA, LOOP (H700:UK)
	1-693-057-11	COMMANDER, STANDARD (RM-S150)
	3-701-630-00	BAG, POLYETHYLENE (H700:UK)
	3-755-073-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, CHINESE, DUTCH) (H700:UK)
∗	4-941-548-01	LABEL, CLASS 1 (H170, H170K/H700:AEP)
∗	4-951-410-01	INDIVIDUAL CARTON (H700:UK)
∗	4-951-934-01	CUSHION, UPPER
∗	4-951-935-01	CUSHION, LOWER
	4-952-050-01	LABEL, MODEL NUMBER (AE)(H700:AEP)
	4-952-381-01	LABEL, MODEL NUMBER (AU)(H170:AUS)

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HARDWARE LIST
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#1	7-682-547-04	SCREW +BVTT 3X6 (S)
#2	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3
#3	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#4	7-682-549-09	SCREW +BVTT 3X10 (S) (H170, H170K)
#5	7-621-255-15	SCREW +PTT 2X3 (S)
#6	7-621-770-67	SCREW +PTT 2.6X6 (S)
#7	7-627-556-08	SCREW +P 2.6X2.8
#8	7-621-775-00	SCREW +B 2.6X3
#9	7-685-234-19	SCREW +KTP 2.6X8 TYPE2NON-SLIT
#10	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#11	7-624-105-04	STOP RING 2.3, TYPE -E
#12	7-621-775-10	SCREW +B 2.6X4
#13	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S
#14	7-685-136-19	SCREW +P 2.6X12 TYPE2 NON-SLIT (H170, H170K

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Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

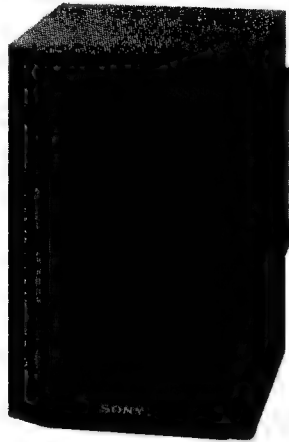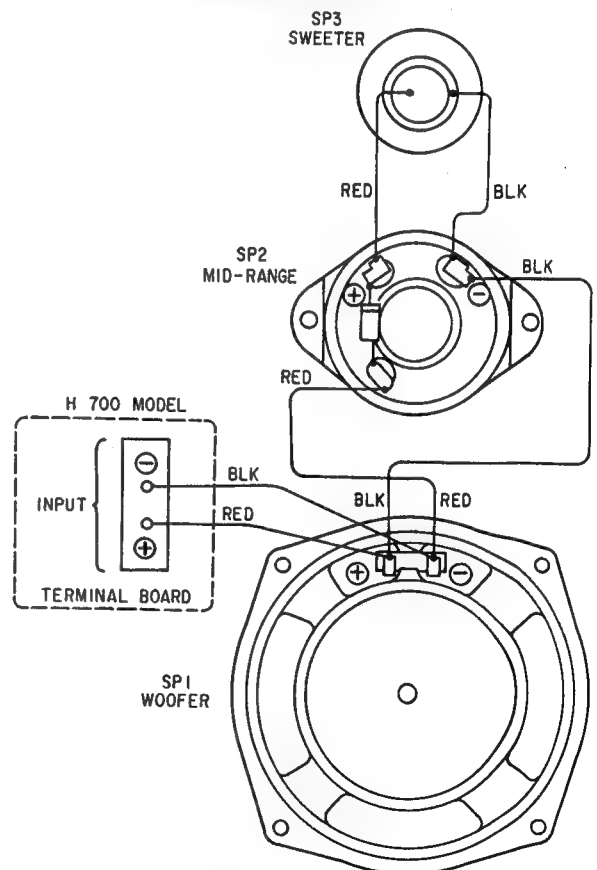**Sony Corporation**
Audio Group

SS-H150/H170/H700

SERVICE MANUAL

- SS-H150 is the speaker system in FH-B150.
- SS-H170 is the speaker system in FH-B170/B170K.
- SS-H700 is the speaker system in MHC-500/700.

Photo:SS-H150

SPECIFICATIONS

Speaker system   3 way system
Speaker units
    Woofer: 13 cm dia., cone type
    Tweeter: 5 cm dia., cone type
    Super tweeter: 2 cm dia., dome
    type
Enclosure   Bass reflex
Frequency range   60 Hz — 20 kHz
Sensitivity   88 dB/w/m
Rated impedance   6 ohms
Dimensions   Approx. 195 × 285 × 230 mm
    (7 5/8 × 11 1/4 × 9 inches)
Weight   Approx. 3.0 kg (6 lb 10 oz)
    net per speaker

WIRING DIAGRAM

SP3
SWEETER

RED   BLK

SP2
MID-RANGE   BLK

RED

H 700 MODEL

INPUT   BLK
    RED   BLK   RED

TERMINAL BOARD

SP1
WOOFER

SPEAKER SYSTEM
SONY®

MICROFILM

3. EXPLODED VIEW AND PARTS LIST

NOTE:

- −XX, −X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts Example :

  KNOB, BALANCE (WHITE)...(RED)

  Parts color   Cabinet's color

- Items marked "†" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

— L–CH —

H700 MODEL

H150,H170 MODEL

H150 MODEL

H170 MODEL
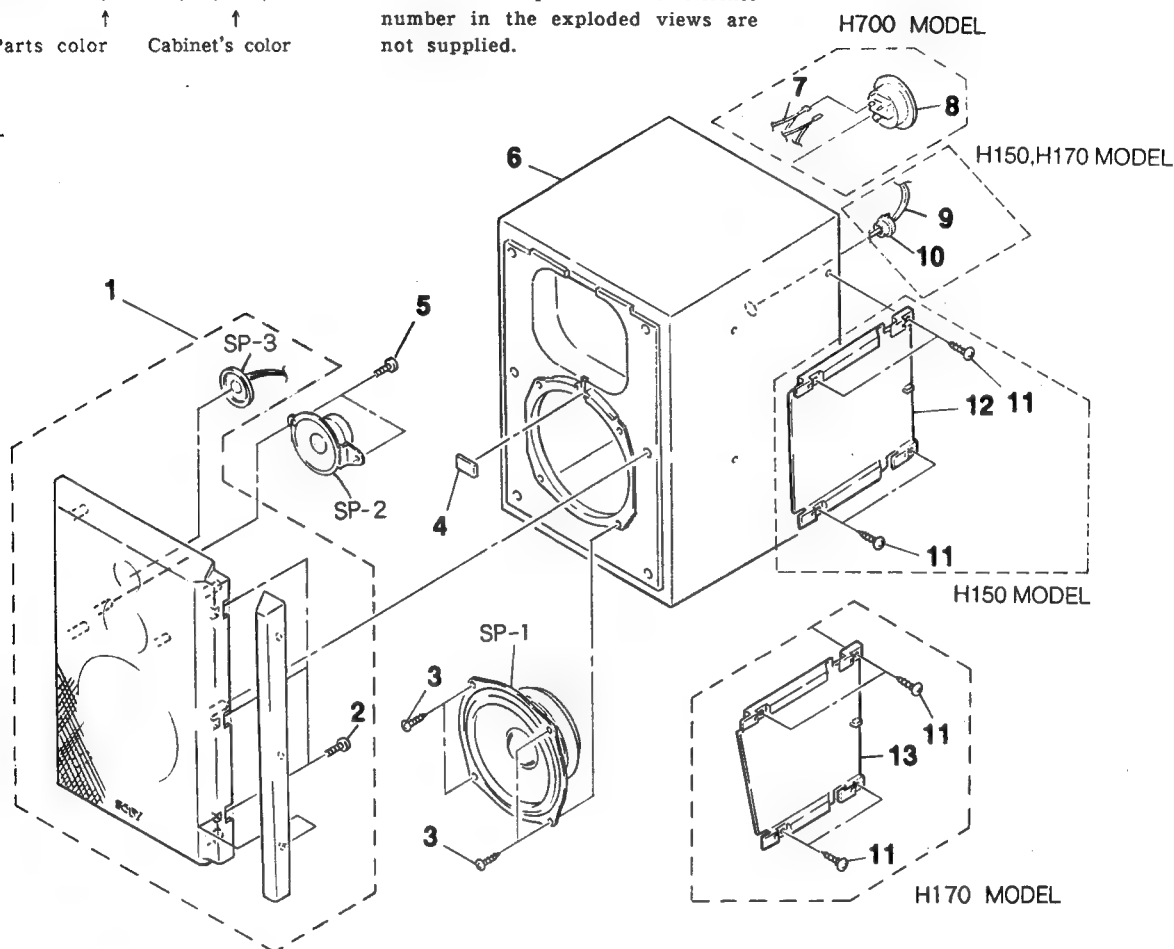
Ref. No.	Part No.	Description	Remarks
1	X-4942-258-1	PANEL (R) ASSY, FRONT	
	X-4942-259-1	PANEL (L) ASSY, FRONT	
	X-4942-611-1	PANEL (R) ASSY, FRONT (H170/H700)	
	X-4942-612-1	PANEL (L) ASSY, FRONT (H170/H700)	
2	7-621-849-10	SCREW +P 3X12 TYPE4	
3	4-874-614-11	SCREW (4) (3.5X14), TAPPING	
4	9-911-844-XX	PACKING	
5	7-685-646-79	SCREW +BVTP 3X8 TYPE2 SLIT	
6	X-4942-260-1	CABINET ASSY, SPEAKER (H700:AEP, UK)	
	X-4942-357-1	CABINET ASSY, SPEAKER (H150, H170)	
	X-4942-803-1	CABINET ASSY, SPEAKER (H700:Germany)	
7	1-575-610-11	CORD, CONNECTION (H700)	
8	1-537-332-11	TERMINAL BOARD (H700)	
9	1-574-792-11	CORD, SPEAKER (H150, H170)	
10	4-870-003-00	CLIPPER, CORD (H150, H170)	

Ref. No.	Part No.	Description	Remarks
11	4-874-614-61	SCREW +BVTP 3.5X16 (H150, H170)	
12	4-929-656-01	PANEL, SIDE (H150)	
13	4-950-752-01	PANEL (L), SIDE (H170)	
13	4-950-753-01	PANEL (R), SIDE (H170)	
SP1	1-544-237-11	SPEAKER (13CM)	
SP2	1-544-236-11	SPEAKER (5CM)	
SP3	1-544-293-11	SPEAKER (2CM)	

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ACCESSORIES & PACKING MATERIALS
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4-920-151-01   SHEET, PROTECTION
4-951-731-01   BOARD, BAFFLE

HCD-H170/H170K/H700

SUPPLEMENT-1

File this supplement with the Service Manual.

Subject: EXPRODED VIEWS/ELECTRICAL PARTS LIST Addition

1. The parts number for the following printed wiring boards are registered as independent parts. The original parts numbers for these wiring boards are changed accordingly.

NOTE:
- Items marked "✦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- EA : Saudi Arabia model
- AUS : Australian model
- EE : East European model
- G : Germany model
- IT : Italian model
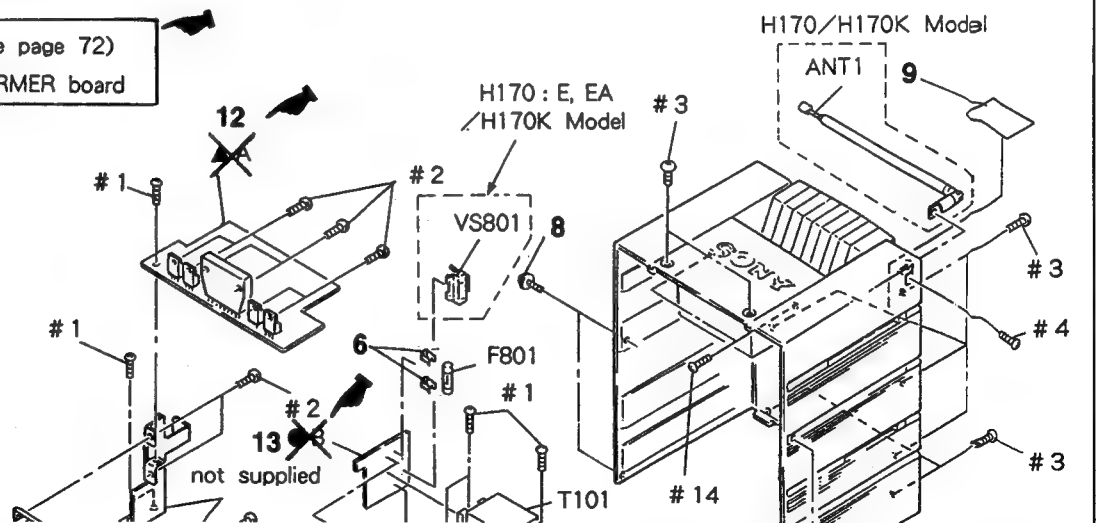- CND : Canadian model

☛ : Changed PART
SECTION 7 EXPLODED VIEWS
Page 71.

7-1. CASE, POWER SECTION

▲ A : POWER board (See page 72)
● B : POWER TRANSFORMER board
(See page 73)

delete

Ref. No.	Part No.	Description	Remarks
✦ 12	A-4347-485-A	POWER BOARD, COMPLETE	(H170:E/EA, H170K model)
	A-4347-493-A	POWER BOARD, COMPLETE	(H170:AEP/EE, H700 model)

Ref. No.	Part No.	Description	Remarks
	A-4347-494-A	POWER BOARD, COMPLETE	(H170:G/IT model)
	A-4347-543-A	POWER BOARD, COMPLETE	(H170:AUS model)
	A-4356-343-A	POWER BOARD, COMPLETE	(H170:CND model)
✦ 13	1-643-352-11	POWER TRANSFORMER BOARD	

7-2. FRONT PANEL, MAIN BOARD SECTION

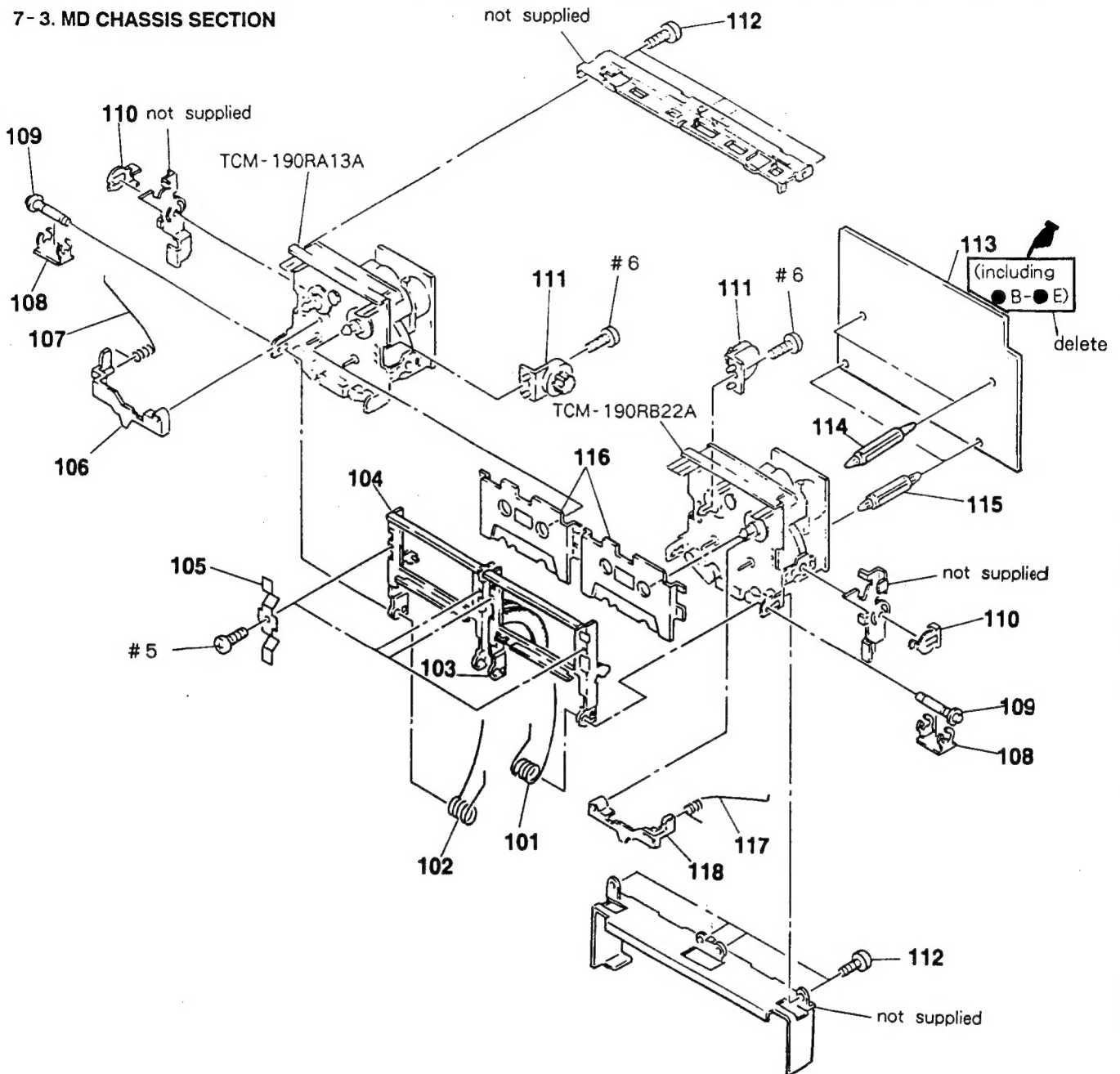● C : VOLUME board (See page 73)
● D : MIC HP board (See page 73)
● E : SW board (See page 73)

delete
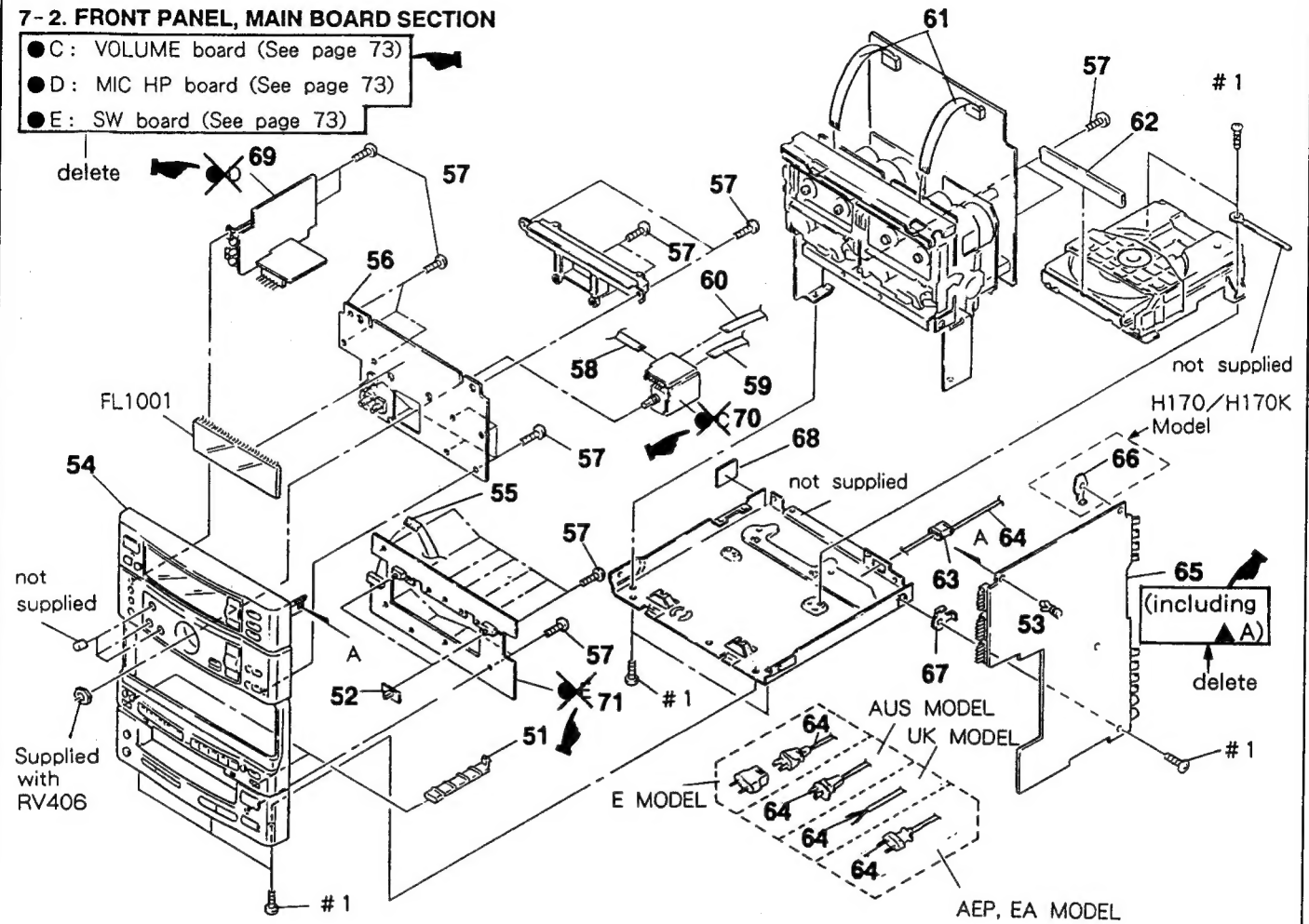
Ref. No.	Part No.	Description	Remarks
* 65	A-4347-468-A	MAIN BOARD, COMPLATE (H170:E/EA/AUS model)	
* 65	A-4347-484-A	MAIN BOARD, COMPLATE (H170K model)	
* 65	A-4347-487-A	MAIN BOARD, COMPLATE (H170:AEP model)	
* 65	A-4347-488-A	MAIN BOARD, COMPLATE (H170:G/IT model)	
* 65	A-4347-489-A	MAIN BOARD, COMPLATE (H170:EE model)	
* 65	A-4347-492-A	MAIN BOARD, COMPLATE (H700:AEP/UK model)	
* 65	A-4356-342-A	MAIN BOARD, COMPLATE (H170:CND model)	

Ref. No.	Part No.	Description	Remarks
* 69	A-4347-467-A	MIC HP BOARD, COMPLATE (H170:CND/AEP/E/EA/EE/AUS, H700 model)	
* 69	A-4347-478-A	MIC HP BOARD, COMPLATE (H170:G/IT model)	
* 69	A-4347-482-A	MIC HP BOARD, COMPLATE (H170K model)	
* 70	1-643-349-12	VOLUME BOARD	
* 71	A-4347-470-A	SW BOARD, COMPLATE (H170:G/IT model)	
* 71	A-4347-471-A	SW BOARD, COMPLATE (EXCEPT H170:G/IT model)	

Page 73.

7-3. MD CHASSIS SECTION

not supplied — **112**

110 not supplied
109
TCM-190RA13A

108
107
106

111 #6
111 #6

TCM-190RB22A

113
(including
● B-● E)
delete

114
115

not supplied
110

116
104
105
#5
103
102
101

109
108

117
118
112
not supplied

Ref. No.	Part No.	Description	Remarks
* 113	A-4347-472-A	SUB BOARD, COMPLETE	(H170:AEP/E/EA/ EE/AUS, H170K, H700 model)
* 113	A-4347-476-A	SUB BOARD, COMPLETE	(H170:G/IT model)
* 113	A-4356-345-A	SUB BOARD, COMPLETE	(H170:CND model)

SECTION 8
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Remarks

•For the list of individual parts constituting the MAIN BOARD,
See the parts list "MAIN BOARD COMPLETE" in the Service
Manual.

MAIN BOARD, COMPLETE
****

* A-4347-468-A (H170:E/EA/AUS model)
* A-4347-487-A (H170:AEP model)
* A-4347-488-A (H170:G/IT model)
* A-4347-489-A (H170:EE model)
* A-4356-342-A (H170:CND model)
* A-4347-484-A (H170K model)
* A-4347-492-A (H700:AEP/UK model)

POWER BOARD, COMPLETE
****

* A-4347-485-A (H170:E/EA, H170K model)
* A-4347-493-A (H170:AEP/EE, H700 model)
* A-4347-494-A (H170:G/IT model)
* A-4347-543-A (H170:AUS model)
* A-4356-343-A (H170:CND model)

****

•For the list of individual parts constituting the SUB BOARD,
See the parts list "SUB BOARD COMPLETE" in the Service
Manual.

MIC HP BOARD, COMPLETE
****

* A-4347-467-A (H170:CND/AEP/E/EA/EE/AUS, H700 model)
* A-4347-478-A (H170:G/IT model)
* A-4347-482-A (H170K model)

Ref. No.	Part No.	Description	Remarks

SW BOARD, COMPLETE
****

* A-4347-470-A (H170:G/IT model)
* A-4347-471-A (EXCEPT H170:G/IT model)

VOLUME BOARD
****

* 1-643-349-12

SUB BOARD, COMPLETE
****

* A-4347-472-A (H170:AEP/E/EA/EE/AUS, H170K, H700 model)
* A-4347-476-A (H170:G/IT model)
* A-4356-345-A (H170:CND model)

POWER TRANSFORMER BOARD
****

* 1-643-352-11

Note :
CND : Canadian model
G   : Germany model
IT : Italian model
EA : Saudi Arabia model
EE : East European model
AUS : Australian model

● Items marked "*" are not stocked
since they are seldom required for
routine service. Some delay should
be anticipated when ordering these
items.

FH-B170/B177/B170K,MHC-700

SERVICE MANUAL

AEP Model

E Model
FH-B170/B170K

East European Model

Australian Model
FH-B170

These systems are composed of following models. As for the service manual, it is issued for each component model, then, please refer to it.

COMPONENT MODEL NAME FOR THESE SYSTEM

	FH-B170	FH-B177	FH-B170K	MHC-700
TUNER, DECK, CD, AMPLIFIER	HCD-H170		HCD-H170K	HCD-H700
SPEAKER SYSTEM	SS-H170	SS-H177	SS-H170	SS-H700

PARTS LIST

● Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

EE : East European Model
EA : Saudi Arabia Model
G : Germany Model

IT : Italian Model
AUS : Australian

Part No.	Description	Remarks
1-501-369-11	ANTENNA (MHC-700)	
1-501-374-11	ANTENNA, LOOP (except FH-B170)	
1-569-007-11	ADAPTOR CONVERSION 2P (E, EA)	
1-575-495-11	CORD, SPEAKER (MHC-700)	
3-755-073-11	MANUAL, INSTRUCTION (AEP, North European, AUS) (English, F, E, RC, NL)	
3-755-073-41	MANUAL, INSTRUCTION (AEP, North European, G, IT) (D, S, P, I)	
3-755-073-51	MANUAL, INSTRUCTION (EE) (English, D, SU, PL)	
3-755-073-71	MANUAL, INSTRUCTION (E, EA) (English, F, E, RC, NL)	

Part No.	Description	Remarks
*4-951-405-01	INDIVIDUAL, CARTON (FH-B170 ; except AUS)	
*4-951-407-01	INDIVIDUAL, CARTON (AUS)	
*4-951-408-01	INDIVIDUAL, CARTON (G, IT, EE)	
*4-951-409-01	INDIVIDUAL, CARTON (AEP, North European)	
*4-951-411-01	INDIVIDUAL, CARTON (FH-B170K)	

Note
F : FRENCH
D : GERMAN
I : ITALIAN
P : PORTUGUESE
E : SPANISH
RC : CHINESE
NL : DUTCH (HOLLAND)
S : SWEDISH
SU : RUSSIAN
PL : POLAND

COMPACT HI-DENSITY COMPONENT SYSTEM

SONY ®

MICROFILM

9-957-147-11

Sony Corporation
Audio Group